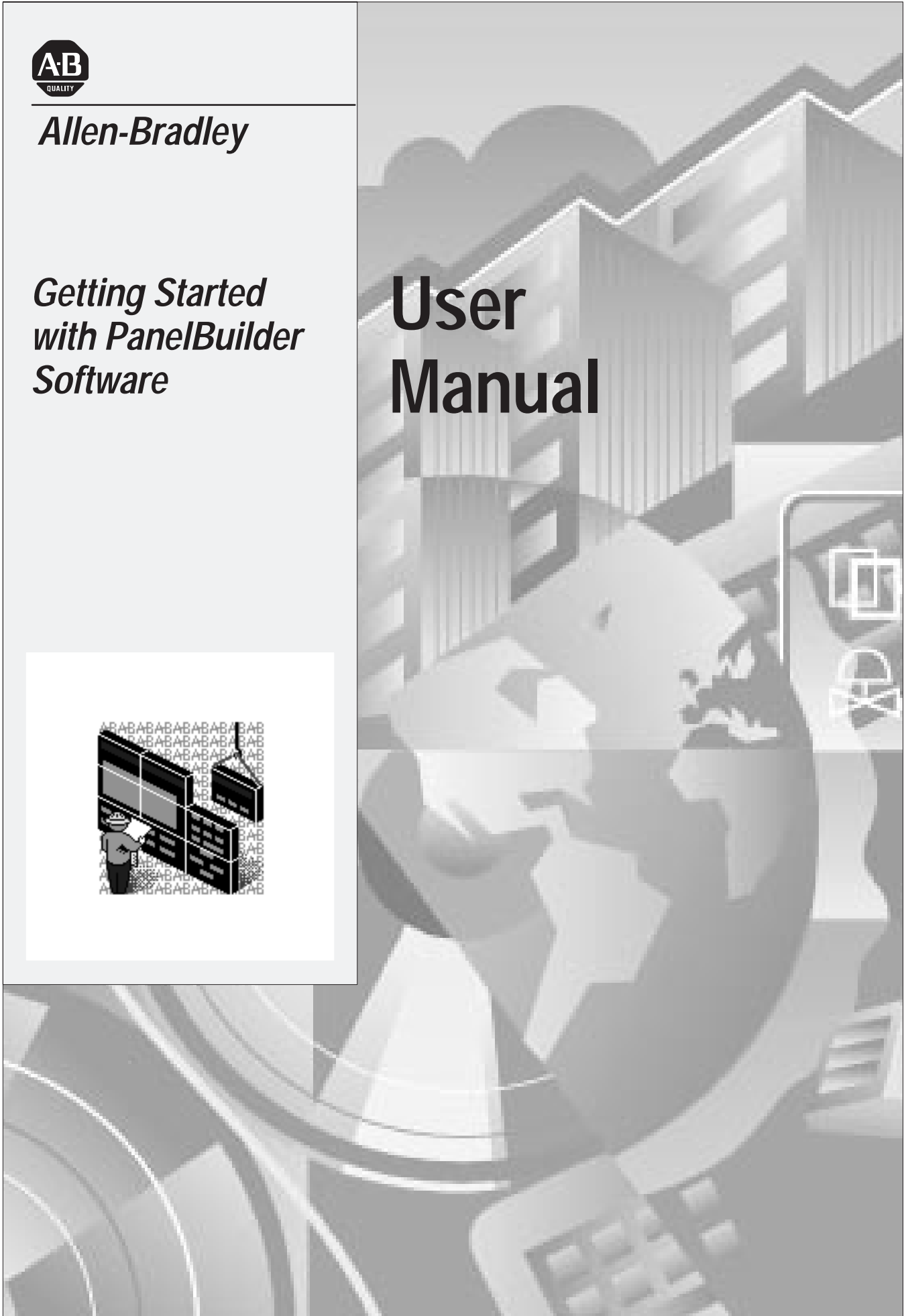**A·B** QUALITY

Allen-Bradley

Getting Started with PanelBuilder Software

User Manual

Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid-State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

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Throughout this manual we use notes to make you aware of safety considerations:

> ⚠ **ATTENTION:** Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attention statements help you to:

- identify a hazard
- avoid the hazard
- recognize the consequences

Important: Identifies information that is critical for successful application and understanding of the product.

Table of Contents

**Creating the Sample
Application**

Chapter 4

Preface

Welcome to the PanelBuilder™ Software. To help you get started, this guide provides some basics on using the software and a sample application. It takes you through all the steps that are required to create, download and run the sample application in a Remote I/O, DH-485 or DH+ PanelView™ terminal.

This guide is intended as an introduction. For more information on software features and how to perform specific tasks refer to the PanelBuilder Software User Manual.

PanelBuilder runs in the Microsoft® Windows® environment. You should be familiar with basic window operations; such as how to use the mouse, choose commands and work with windows and dialog boxes.

Contents of this Guide

- *Preface*
  An overview of this guide and what you need to create, download and run the sample application.
- Chapter 1 – *PanelBuilder Basics*
  Takes a quick look at the PanelBuilder Software.
- Chapter 2 – *Initial System Setup*
  Describes the setup of system components and how to load the required ladder logic program into a PLC or SLC controller.
- Chapter 3 – *Overview of Sample Application*
  Provides a description of the sample application and its function.
- Chapter 4 – *Creating the Sample Application*
  Provides step-by-step instructions for creating the sample application.
- Chapter 5 – *PanelView Terminal Setup*
  Shows how to set runtime communication parameters and power-up options for the PanelView terminal and controller.
- Chapter 6 – *Entering the Application Tags*
  Shows how to use the Tag Editor to enter tags for the application.
- Chapter 7 – *Validating and Downloading the Application*
  Shows how to download the sample application to a PanelView terminal.
- Chapter 8 – *Running the Application*
  Shows how to run the application in the PanelView terminal.

Conventions

The following conventions are used in this guide.

- PanelBuilder refers to the PanelBuilder Configuration Software.
- Terminal refers to a PanelView Operator Terminal.
- Windows refers to Microsoft Windows versions 3.1 (or higher), or Windows 95.
- Keys on the keyboard appear in small capital letters. For example, the Ctrl key appears as CTRL in the text, the Alt key as ALT, and so on.
- When keys are to be pressed in combination, you'll see them connected by a +. For example, ALT+F4 means hold down the ALT key while you press F4.
- Bold text precedes all procedures.

  To open an application file:

- A solid right cursor in the left margin indicates a tip or hint.

▶ Anchor point is the handle opposite the handle you choose. The anchor point doesn't move when sizing objects.

Related Publications

The following table lists other publications related to the PanelBuilder Software and the PanelView Operator Terminals.

Publication Title	Publication No.
PanelBuilder Software User Manual	2711-6.0
PanelView Terminal User Manual	2711-6.1
PanelView File Transfer Utility	2711-805

For information on your PLC or SLC controller, the Advanced Programming Software, or the 6200 Series Programming Software, refer to the appropriate manuals.

For information on window operations, refer to your Windows user guide.

What You Need

This section lists the items needed to create, download and run the sample application in a PanelView terminal using either:

- Remote I/O communications
- DH-485 communications
- DH+ communications

Personal Computer

The minimum system requirements for installing and running PanelBuilder Software on a personal computer are:

- Personal computer with a 386 or higher processor
- MS-DOS® operating system version 5.0 or later
- Windows® 3.1 or later (Windows for Workgroups 3.11 or later), Windows 95, or Windows NT 4.0.
- 500K free conventional memory
- at least 40 MB available hard disk space
- VGA or other high-resolution display supported by Windows
- Mouse or other Windows pointing device

PanelBuilder Software

The PanelBuilder Software (Catalog No. 2711-ND3) is required to create applications on a computer for PanelView terminals.

▶ Install the PanelBuilder Software as described in Chapter 2 of the PanelBuilder Software manual.

PanelView Operator Terminal

The sample application operates with all of PanelView terminals. The differences are in the:

- display type (monochrome or color)
- operator input (touch screen or keypad)
- communication ports (Remote I/O, DH-485, RS-232, DH+)

Download Cables

Remote I/O, RS-232 or DH+ Versions of PanelView Terminals

Theses PanelView terminals require one of the following cables to download applications using an RS-232 connection:

- Catalog No. 2711-NC13
- Catalog No. 2711-NC14
- Catalog No. 2706-NC13

The only difference between the cables is the cable length.

DH-485 Versions of PanelView Terminals

The DH-485 versions of the PanelView terminals require the following items to download applications:

- Personal Computer Interface Converter (Catalog No. 1747-PIC)
- Communications Cable (Catalog No. 1747-C10, -C11, -C20)

The Personal Computer Interface Converter receives power from an SLC controller. Downloading an application to the terminal without an SLC connected requires a power supply (Catalog No. 1747-NP1) or a powered Link Coupler (Catalog No. 1747-AIC).

Communication Cable

A communication cable is required to connect the PanelView terminal to a PLC or SLC controller.

Remote I/O Versions of PanelView Terminals

The Remote I/O versions of the PanelView terminals connect to a PLC controller using Remote I/O cable (Catalog No. 1770-CD), which is equivalent to the Belden 9463 cable.

DH-485 Versions of PanelView Terminals

The DH-485 versions of the PanelView terminals require one of the following:

- Catalog No. 1747-C10
- Catalog No. 1747-C11
- Catalog No. 1747-C20

The only difference between the cables is the cable length.

RS-232 Versions of PanelView Terminals

The RS-232 versions of the PanelView terminals use the same cable for downloading and communications.

- Catalog No. 2711-NC13
- Catalog No. 2711-NC14
- Catalog No. 2706-NC13

DH+ Versions of PanelView Terminals

The DH+ versions of the PanelView terminals connect to a DH+ link using a Belden 9463 cable (Catalog No. 1770-CD).

PLC or SLC Controller

Remote I/O Versions of PanelView Terminals

The Remote I/O versions of the PanelView terminal operate with a PLC 5 or SLC controller (with a 1747-SN Scanner). The sample application uses a PLC 5/25 controller.

DH-485 Versions of PanelView Terminals

The DH-485 versions of the PanelView terminal operate with both fixed and modular style SLC 500 controllers.

RS-232 Versions of PanelView Terminals

The RS-232 versions of the PanelView terminal require an SLC 5/03 or 5/04 controller.

DH+ Version of PanelView Terminals

The DH+ versions of the PanelView terminal operate with either a PLC 5 or SLC controller. The sample application uses a PLC 5/25 controller.

Application and Ladder Logic Program

The PanelBuilder installation disks contain:

- Getting Started application (.PBA files) for each of the PanelView terminals.
- Required ladder logic to run the application, including:
  - SLC ladder logic files for DH-485/DH+ application
  - PLC ladder logic files for Remote I/O application
  - PLC ladder logic files for DH+ application

The files are stored on your computer as follows:

DH-485 or DH+ Application	C:\AB\PBWIN\GS\5BV2485.PBA
	5KV2485.PBA
	6BV2485.PBA
	6KV2485.PBA
	9CKV2485.PBA
	9CTV2485.PBA
	9MKV2485.PBA
	9MTV2485.PBA
	10KC_485.PBA
	10KG_485.PBA
	10TC_485.PBA
	10TG_485.PBA
	14MKV2485.PBA
	14MTV2485.PBA
SLC Ladder Logic Files	C:\AB\SLC500\GS\GETSTRTD.AC$
	GETSTRTD.ACH
	GETSTRTD.B0$
	GETSTRTD.B1$
	GETSTRTD.B2$
	GETSTRTD.IX$
	GETSTRTD.LX$
	GETSTRTD.NAM
	GETSTRTD.OP$
	GETSTRTD.PC$
	GETSTRTD.XD$
	GETSTRTD.XO$
Remote I/O Application	C:\AB\PBWIN\GS\5BV2RIO.PBA
	5KV2RIO.PBA
	6BV2RIO.PBA
	6KV2RIO.PBA
	9CKV2RIO.PBA
	9CTV2RIO.PBA
	10KC_RIO.PBA
	10KG_RIO.PBA
	10TC_RIO.PBA
	10TG_485.PBA
	9MKV2RIO.PBA
	9MTV2RIO.PBA
	14MKV2RIO.PBA
	14MTV2RIO.PBA

PLC (RIO) Ladder Logic Files	C:\AB\PLC5\GS\GSRIO.AC$
	GSRIO.AF5
	GSRIO.B0$
	GSRIO.B1$
	GSRIO.D1$
	GSRIO.IX$
	GSRIO.LX$
	GSRIO.OP$
	GSRIO.P1$
	GSRIO.PC$
	GSRIO.TTL
PLC (DH+) Ladder Logic Files	C:\AB\PLC5\GS\GSDHP.AC$
	GSDHP.AF5
	GSDHP.B0$
	GSDHP.B1$
	GSDHP.D1$
	GSDHP.IX$
	GSDHP.LX$
	GSDHP.OP$
	GSDHP.P1$
	GSDHP.PC$

PanelBuilder Basics

Chapter Objectives

This chapter covers basics on using PanelBuilder Software.

Windows Environment

PanelBuilder runs in the Microsoft Windows environment. You should be familiar with window operations. That is, you should know how to use the mouse, choose menu commands, and work with windows and dialogs.

If you use a mouse, here are the basic terms used:

Term	Means
Click	Position the mouse pointer on the object, area or field, then press and release the left mouse button once.
Double-click	Position the mouse pointer on the object, area, or field and then click the left mouse button twice quickly.
Select item or command	Click to highlight the item to be affected by the next command, or click on a dialog box option.
Choose item or command	Click on a tool, menu command or an item in a dialog box or Help window.
Drag	Click where to start a selection and hold down the left mouse button. Move pointer to end of selection and release the mouse button. Use drag to highlight a text string.

If you prefer to use the keyboard:

Term	Means
Choose menu command	Press the ALT key and type the underlined letter in the menu name . Then type the letter underlined in the command name.
Select item or command	Use the arrow keys (or in a dialog, both the TAB and arrow keys) to move to the item.
Choose item or command	Highlight an item, then press the ENTER key.

PanelBuilder Windows

Each time you start PanelBuilder, the PanelBuilder window opens. This is where you create an application. Window elements are described below.
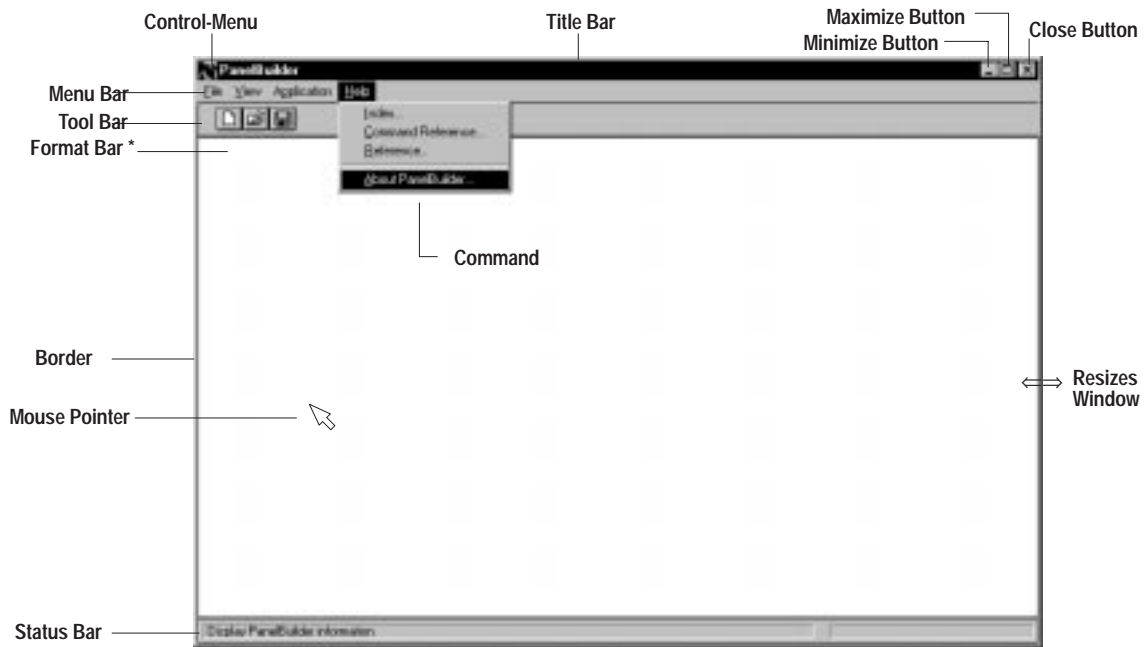
Feature	How to use it
Menu Bar	Click a name on the menu bar to open a menu and display its commands. Or press ALT-X, where X is the underlined letter in the menu name.
Command	Click a command to choose it or carry out its action. Or type the underlined letter in the command name.
Title Bar	Drag to move a window.
Tool Bar	Click a tool to carry out a frequently used command. The tool bar toggles on and off from the View menu.
*Format Bar	Click a tool to format an object or text. The format bar doesn't appear until you open an application.
Status Bar	Shows what PanelBuilder is doing at the moment. The status bar toggles on and off from the View menu.
Control-Menu	Click to open the Control menu. Double-click to close a window.
Minimize button	Click to reduce window to an icon.
Maximize button	Click to enlarge a window.
Close button	Closes the window.
Border	Drag to change the size of a window.
Mouse pointer	Use to select an item or object.

Application File Window

When you open an application, the application file window opens listing all screens in the application by number and name.

Control-menu

Close Button
Maximize Button
Minimize Button
Title Bar

Border

Application File Window

Resizes
Window

2711-K9C1   PV900C Keypad, FRN 2.00-2.01

Screens:

Alarm Banner
1 - MOTOR STATUS
2 - MOTOR SPEED
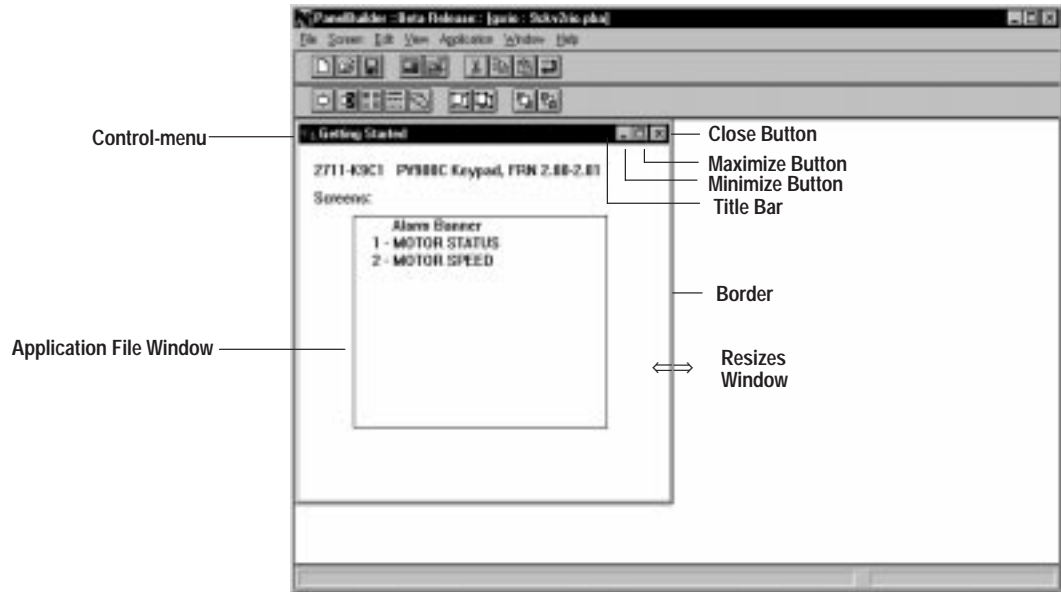
Application Screen Window

Each application screen looks like the PanelView terminal (touch, keypad, or keypad & touch) for which you are creating the application. Objects are placed inside the display area. On keypad terminals, you can also place objects on function keys. Screens are moved and sized like any other window. Multiple screens can be open at one time.

Title Bar

Application Screen

1 - Main Menu
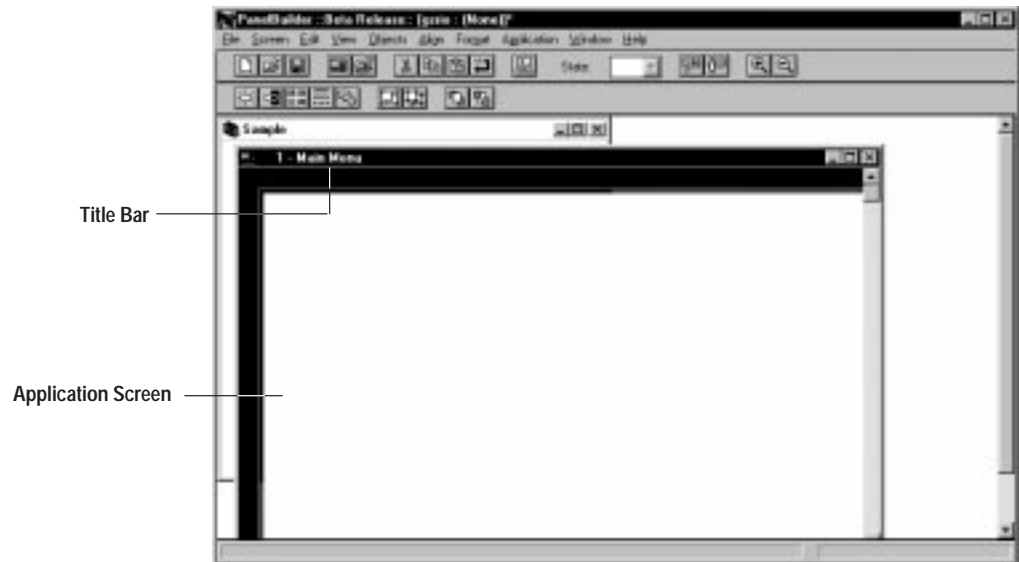
Accessing Objects

Objects are accessed from the Objects menu or the Toolbox.

Draw Pointer
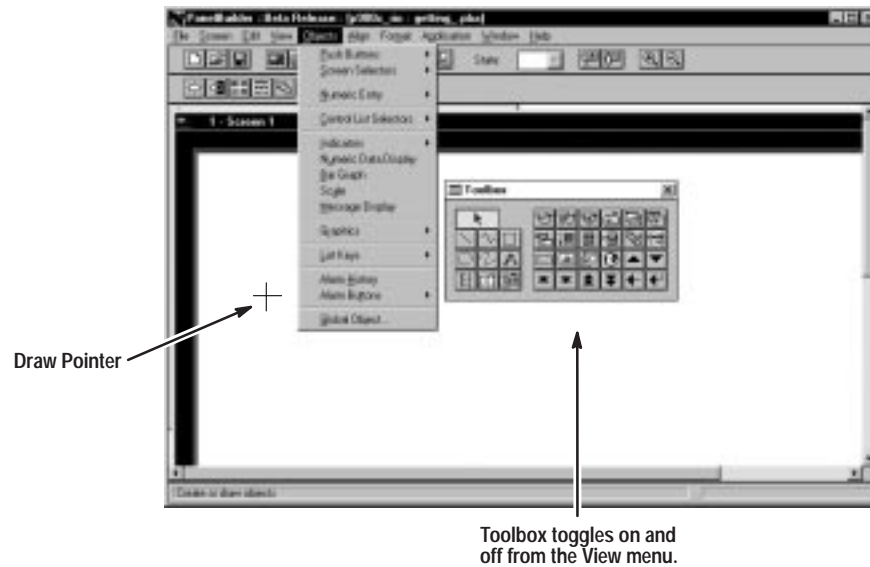
Toolbox toggles on and
off from the View menu.

After selecting an object and moving the mouse pointer into the display area, the pointer changes to a crosshair (+). The crosshair indicates where an object appears when you place it.

If moved to an illegal area of the screen, the crosshair looks like this ⊘.

Placing Objects

On touch screen terminals, objects are placed in the display area. On keypad terminals, objects are placed in the display area and assigned function keys. On terminals that support both keypad and touch input, you place objects in the display area or on function keys.

To create an object in the display area:

1. Choose an object from the Objects menu.

   Or click the appropriate tool in the toolbox.

2. Position the pointer (+) where you want to place the object.

3. Click the left mouse button to place the default size.

   Or hold down the left mouse button and drag the pointer to size the object. Release the mouse when the object is the right size. The object is automatically selected.
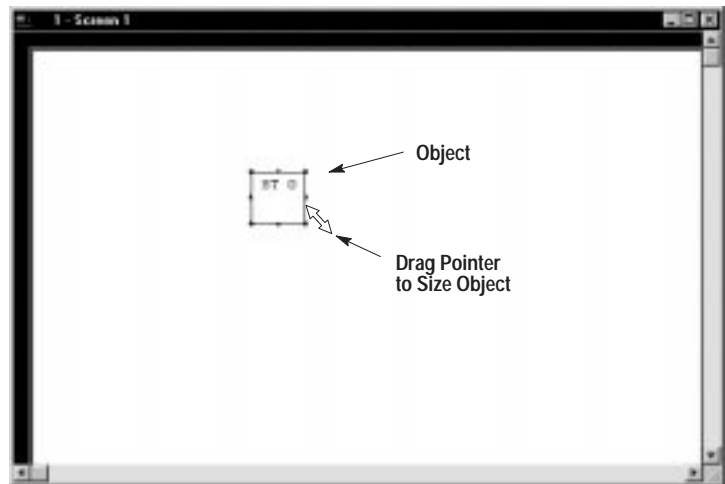
4. To place another object of the same type, move the pointer to a new location and repeat step 3.

5. Click the right mouse button to exit the object mode.

   Or click the selection tool in the toolbox.

   Or press the ESC key.

For each object placed on the screen, the status bar shows:

- Object ID number (assigned by PanelBuilder)
- X and Y coordinates of upper left corner of object (in pixels). Coordinates are referenced from upper left corner of display (x=0, y=0).
- Width and height of object (in pixels)
- Object type (right element of status bar)

| Object ID: 734   x= 64 y= 16   width= 32 height= 32 | Momentary Push Button |

To create an object on a function key:

1. Choose an object from the Objects menu.

Or click the appropriate tool in the toolbox.

2. Position the pointer (+) over a function key and click the left mouse button.

If the function key is already assigned to an object, the pointer changes to ⃠. Reposition pointer over another key.

Pointer over Function Key
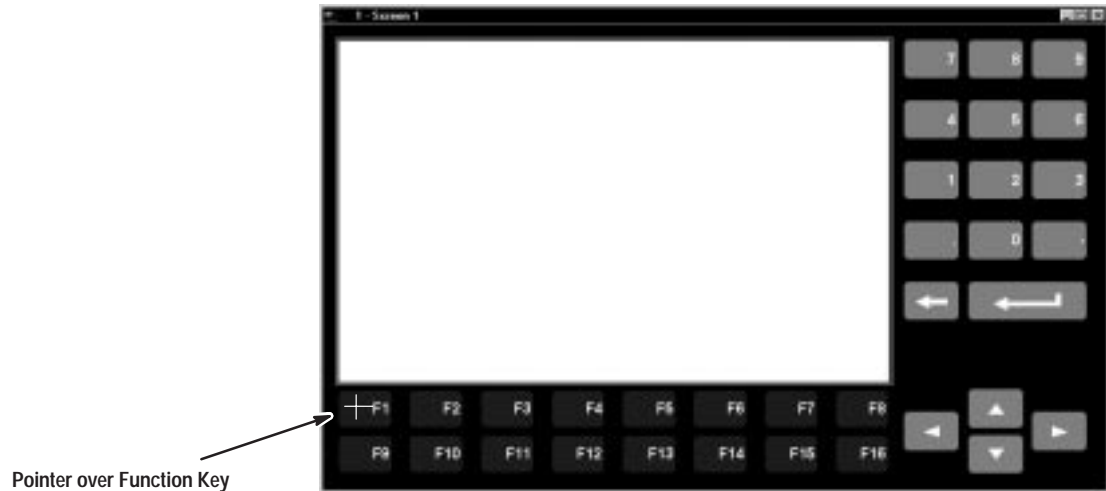
A graphic appears on the function key showing the object type. An asterisk also appears next to the key number.
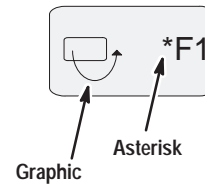
Asterisk

Graphic

3. Click the right mouse button to exit the object mode.

Or click the selection tool in the toolbox.

Selecting Objects

Before you can move, size or format an object you must first select the object. A selected object has handles.

To select an object:

Position the mouse pointer anywhere on the object and press the left mouse button. Handles appear on the object.
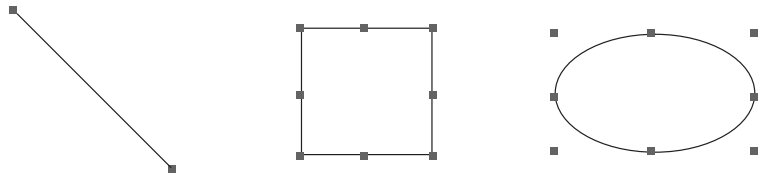
A line has one handle at each end. Rectangles and squares have handles around their edges. Other objects (ellipses and circles) have handles around an invisible bounding box.

To deselect an object:

- Position pointer outside the object and press the left mouse button.
- Or select another object.

To select multiple objects:

1. Position pointer above and to the left of the objects you want to group.

2. Press the left mouse button and drag a selection rectangle around the objects.

Selection Rectangle
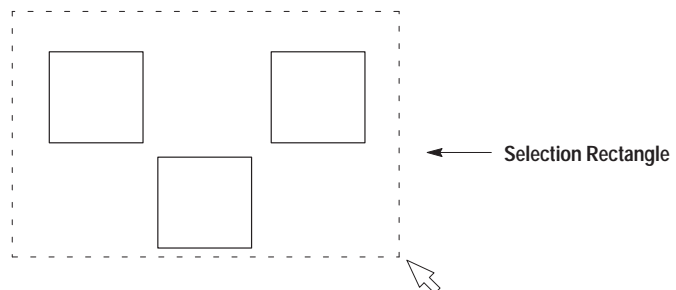
3. Release the mouse button.

▶ The other way to select multiple objects is to hold down the SHIFT key and click on each object. To add or remove an object from the selection, hold down the SHIFT key and click on the object.

To select all objects:

Choose Select All from the Edit menu.

Handles appear on all objects to show that they're all selected.

Sizing Objects

To size an object:

1. Select the object by clicking anywhere on the object. Handles appear on the object.
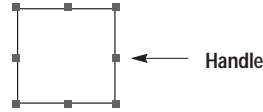
Handle

2. Position the pointer over one of the handles.

The pointer changes to show the direction you can size the object.

Size Diagonally

Size Horizontally

Size Vertically
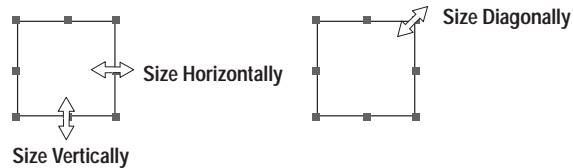
3. Press the left mouse button and drag the handle.

The object stretches from the anchor point to the position of the pointer, expanding and contracting as you move the mouse.

▶ The anchor point is the handle opposite the handle you choose. It does not move when objects are sized.

4. Release the mouse button when the object is the right size.

Objects with inner graphics can't be sized smaller than the graphic. You might have to move or delete the inner graphic to size the object appropriately.

Moving Objects

To move an object:

1. Move the pointer anywhere inside the object.

2. Hold down the left mouse button and drag the object to its new location. The pointer changes to show that you are moving the object. An outline appears as you drag the object.

Old Location   New Location   New Location
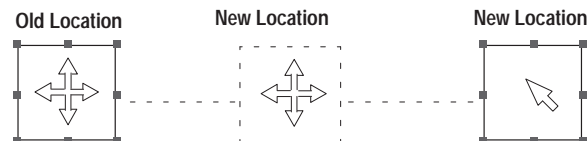
3. Release the mouse button.

Getting Help

Help
Index...
Command Reference...
Reference...
Using Help...
About PanelBuilder...

Help for PanelBuilder is available by choosing a command from the Help menu or pressing the F1 key. The following help window opens when you choose Index from the Help menu.
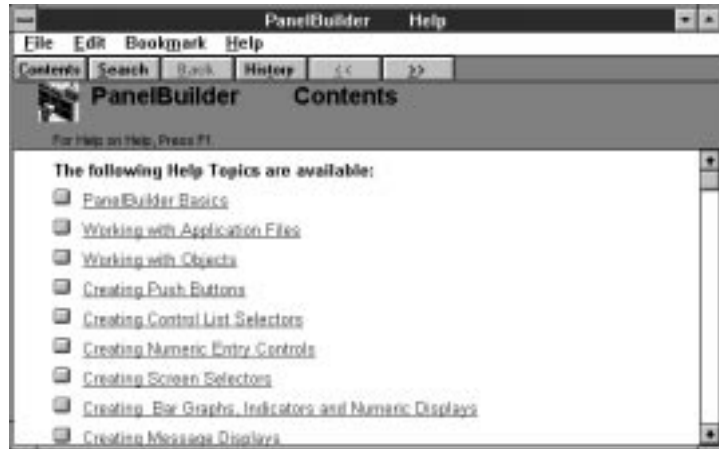
Help feature	How to use it
Contents button	Choose to see a list of topics.
Search button	Choose to search for topics by keywords.
Back button	Choose to view the previous topic. Continue to choose the button to step back through all the topics.
History button	Choose to display a list of topics you have viewed. In the list, double-click a topic name to view it again.
>>	Choose to display the next topic in a series of topics.
<<	Choose to display the previous topic in a series of topics.

Initial System Setup

Chapter Objectives

This chapter contains these sections.

Sections	Page
Setting up System Components	2–1
Loading the SLC Ladder Logic Program	2–5
Loading the PLC Ladder Logic Program	2–5

**Setting up
System Components**

This section shows how to set up the system components that are required to install, download and run the sample application.

System Components for PanelView with DH-485 Ports

- DH-485 PanelView Terminal
- Personal Computer with installed:
  - PanelBuilder Software
  - Advanced Programming Software (APS)
- SLC 500 Controller
- 2 Communication Cables (Catalog No. 1747-C10, -C11 or -C20)
- Personal Computer Interface Converter (Catalog No. 1747-PIC)

Make the connections shown below. No other connections are required.

**Node 2
PanelView 900 DH-485 Terminal Shown**

**Node 0
Personal Computer**

PanelBuilder

Serial Port
COM1 or COM2

**Personal Computer
Interface Converter**
Catalog No. 1747-PIC

DH-485 Connector   **DH-485 Connector**

**Node 1
SLC Controller**

Cable
Catalog No. 1747-C10, -C11, -C20
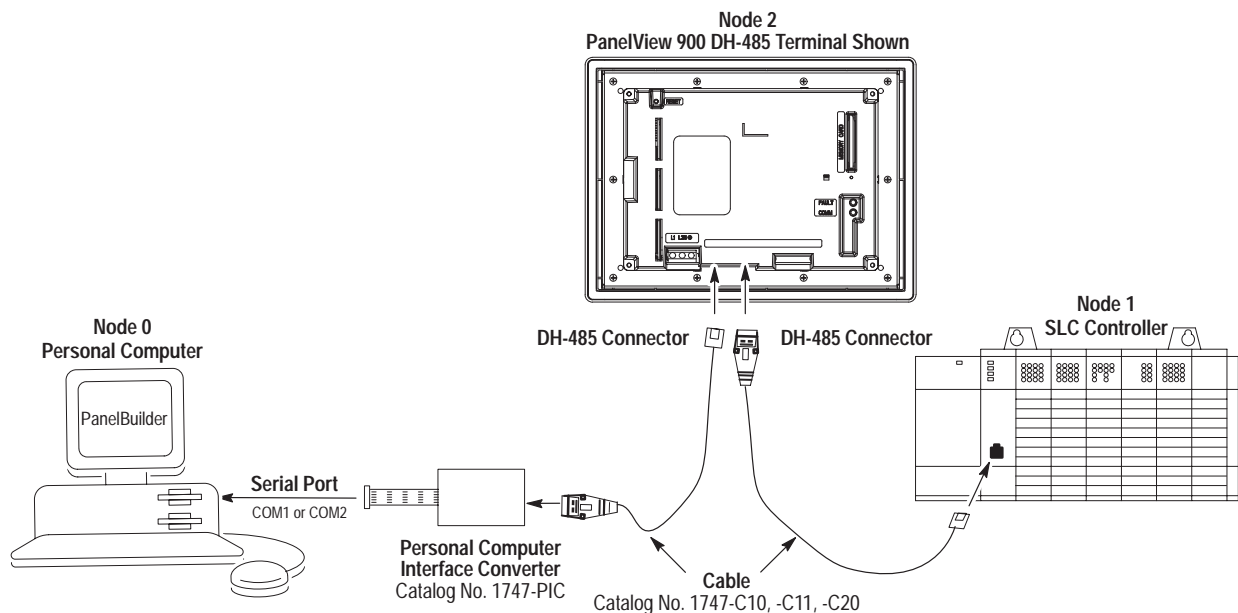
System Components for PanelView with RS-232 (DH-485) Port

- RS-232 PanelView Terminal
- Personal Computer with installed:
    - PanelBuilder Software
    - Advanced Programming Software (APS)
- SLC 5/03 or 5/04 Controller
- One Communication Cable (Catalog No. 2711-NC13,-NC14 or 2706-NC13)

**Node 0
Personal Computer**

PanelBuilder

Serial Port
COM1 or COM2

**Node 2
PanelView 900 RS-232 Terminal Shown**

**Node 1
SLC 5/03 or 5/04 Controller**

Cable
Catalog No. 2711-NC13,
2711-NC14, 2706-NC13

To Channel 0

Note: The same cable is used for transferring applications to the terminal and for connecting the terminal to the SLC 5/03 or 5/04 Controller. After downloading the application, disconnect the cable from the computer and connect to Channel 0 Port of SLC 5/03 or 5/04.

System Components for PanelView with Remote I/O Port

- Remote I/O PanelView Terminal
- Personal Computer with installed:
    - PanelBuilder Software
    - 6200 Series Programming Software

- PLC-5 Controller
- One RIO Communication Cable (Catalog No. 1770-CD), equivalent to a Belden 9463 cable. Along with two RIO connectors, one RIO connector is provided with the terminal.
- One RS-232 Communication Cable (Catalog No. 2711-NC13,-NC14 or 2706-NC13)

Node 0
Personal Computer

PanelBuilder

Node 2
PanelView 900 Remote I/O Terminal Shown

COMM   FAULT

ALLEN-BRADLEY

Serial Port
COM1 or COM2

Node 1
PLC-5 Controller

Cable
Catalog No. 2711-NC13,
2711-NC14, 2706-NC13

RS-232 Port

Remote I/O Port
3-Pin Terminal Block Connector

PLC RIO Port

Cable
Catalog No. 1770-CD
(Belden 9463)
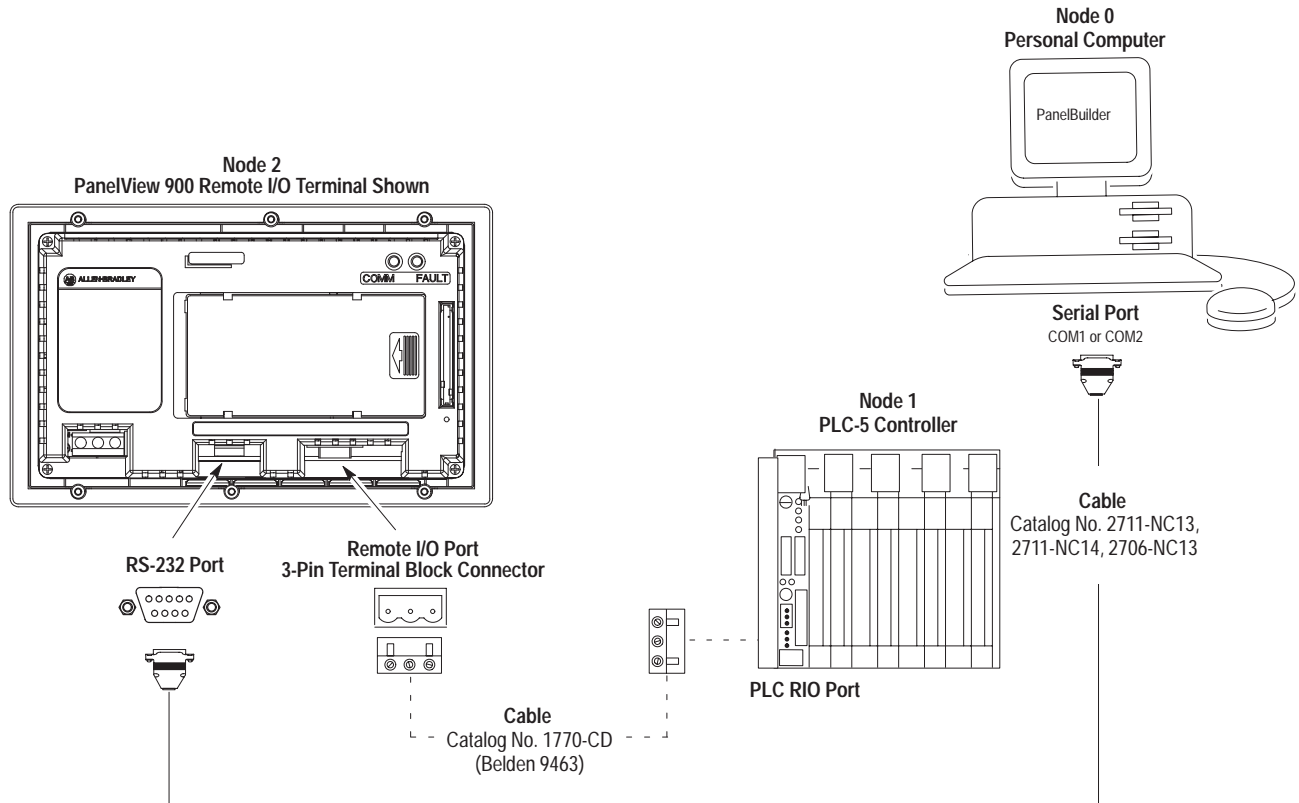
System Components for PanelView with DH+ Port

- DH+ PanelView Terminal
- Personal Computer with installed:
  – PanelBuilder Software
  – 6200 Series Programming Software
- PLC-5 Controller
- One Communication Cable (Catalog No. 1770-CD), equivalent to a Belden 9463 cable.
- One RS-232 Communication Cable (Catalog No. 2711-NC13,-NC14 or 2706-NC13)
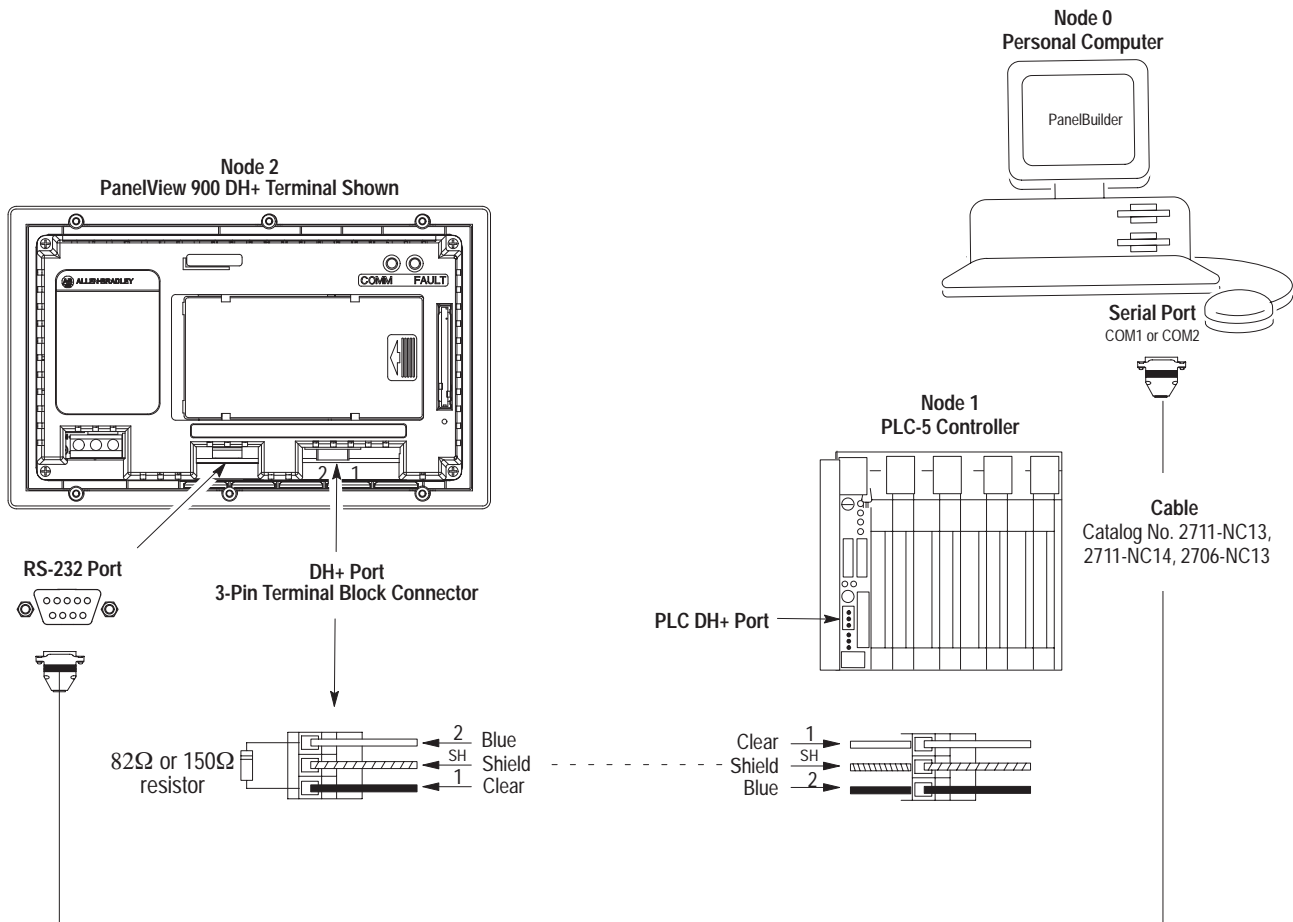
Loading the SLC Ladder Logic Program

For DH-485 or DH+ applications that communicate with an SLC controller, the required ladder logic program and data files are supplied on the PanelBuilder installation disks.

The following files are installed in the C:\AB\SLC500\GS directory during PanelBuilder installation.

SLC Ladder Logic Files

GETSTRTD.AC$	GETSTRTD.LX$
GETSTRTD.ACH	GETSTRTD.NAM
GETSTRTD.B0$	GETSTRTD.OP$
GETSTRTD.B1$	GETSTRTD.PC$
GETSTRTD.B2$	GETSTRTD.XD$
GETSTRTD.IX$	GETSTRTD.XO$

Run the APS software installed on your computer and load the ladder logic program into the SLC controller. Appendix A contains the documented ladder logic program.

For details on how to use the Advanced Programming Software refer to the appropriate manuals.

Loading the PLC Ladder Logic Program

For Remote I/O and DH+ applications that communicate with a PLC5 controller, the required ladder logic program and data files are supplied on the PanelBuilder installation disks.

The following files are installed in the C:\AB\PLC5\GS directory during PanelBuilder installation.

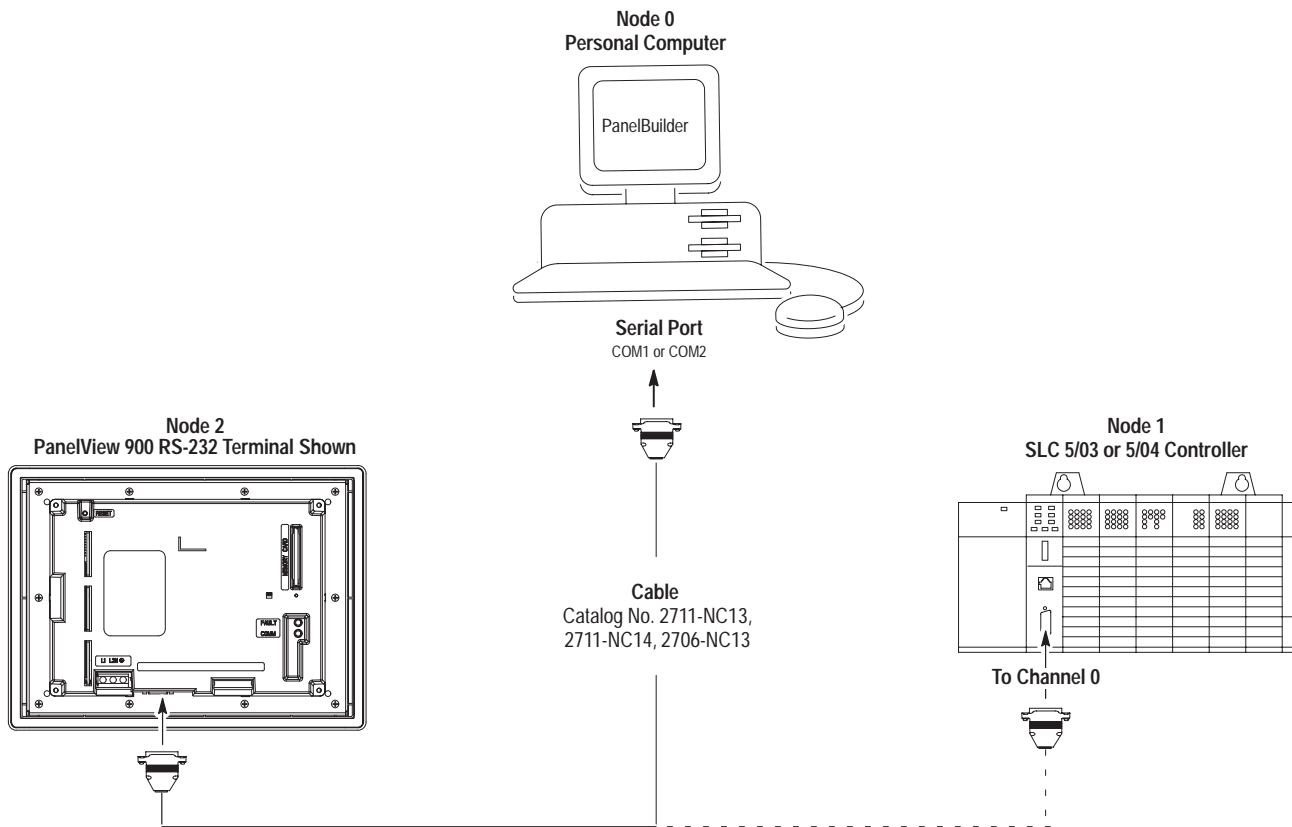| **PLC (RIO) Ladder Logic Files**		**PLC (DH+) Ladder Logic Files**	
GSRIO.AC$	GSRIO.LX$	GSDHP.AF5	GSDHP.LX$
GSRIO.AF5	GSRIO.OP$	GSDHP.AC$	GSDHP.OP$
GSRIO.B0$	GSRIO.P1$	GSDHP.B0$	GSDHP.P1$
GSRIO.B1$	GSRIO.PC$	GSDHP.B1$	GSDHP.PC$
GSRIO.D1$	GSRIO.TTL	GSDHP.D1$	
GSRIO.IX$		GSDHP.IX$	

Load the ladder logic program into the PLC controller. Appendix B contains the ladder logic for the Remote I/O application. Appendix C contains the ladder logic for the DH+ application.

For details on how to load the ladder logic program into the PLC controller, to the appropriate user manuals.

Overview of Sample Application

Chapter Objectives

This chapter contains these sections.

Purpose of Application

The Getting Started application contains objects to control and monitor the status of a motor. The PanelView terminal reads/writes data to either:

- an SLC 500 controller on a DH-485 network
- an SLC 500 controller or PLC 5 controller on a DH+ network
- a PLC 5 controller on a Remote I/O network

Chapter 4 gives procedures for creating the application on a PanelView 900 monochrome terminal with function keys.

- If creating the application for any of the PanelView touch screen terminal, touch cell input is automatically enabled.
- If creating the application for a PanelView color terminal, the procedures reference colors.

  For PanelView grayscale terminals, the color palette shows 4 shades of gray. Select the appropriate shades.

- If creating the application for other PanelView terminals, use appropriate text sizes.

You can open any of the .PBA files stored in AB\PBWIN\GS to view the getting started application on your computer.

Application Screens

The application contains 3 screens:

- Motor Status
- Motor Speed
- Alarm Banner (V2.0 or later software only)

The Motor Status and Motor Speed screens each contain a screen button allowing you to navigate between the two screens.

The Alarm Banner is a global display that pops up over the Motor Status or Motor Speed screen when an alarm is triggered. Alarms are supported in PanelBuilder V2.0 (or later) Software.

For touch screen terminals, the application includes a CONFIG SCREEN button allowing the operator to display the terminal's Configuration Mode menu when the application is running.

Motor Status Screen

The Motor Status screen is the first screen that appears when you power on the PanelView terminal. It allows you to:

- start and stop motor
- set motor control to auto or manual mode
- monitor status (start/stop) and mode (auto/manual) of motor
- go to the Motor Speed screen

Keypad Terminal
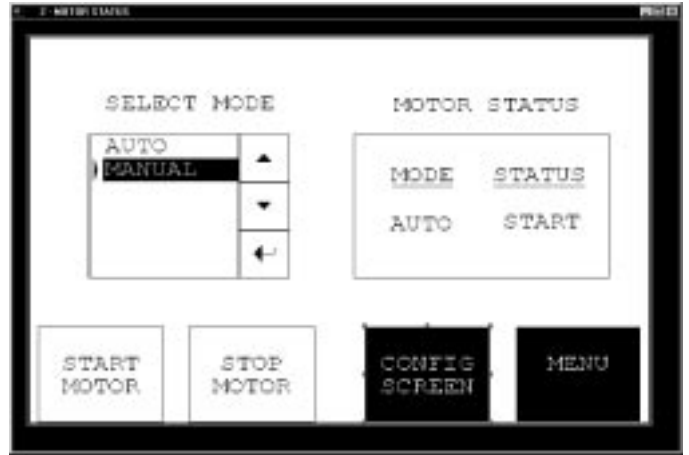
Touch Screen Terminal

The following table lists objects on the Motor Status screen and each object's function. Object headings are created as background text.

Object	Object Type	Function
SELECT MODE (AUTO / MANUAL)	Standard Control List with Background Text	Sets the motor to auto or manual mode by moving the cursor up or down and pressing the Enter key. The touch screen terminal requires list keys to move the cursor through the control list and select an option.
START MOTOR F1	Momentary Push Button (Normally Open)	Starts the motor when you press the F1 key or touch the screen object.
STOP MOTOR F2	Momentary Push Button (Normally Open)	Stops the motor when you press the F2 key or touch the screen object.
Motor Speed F8	Goto Screen Button	Displays the Motor Speed screen when you press the F8 key (F5 on PV550 terminals) or touch the screen object.
MOTOR STATUS (MODE STATUS / MANUAL START)	2 Multistate Indicators with Background Text	MODE indicator shows whether the motor is in AUTO or MANUAL mode. STATUS indicator shows whether the motor is on (START) or off (STOP).

Application Screens

Motor Speed Screen

The Motor Speed screen allows you to:

- monitor motor speed
- increase or decrease motor speed
- enter a new motor speed
- go to the Motor Status screen
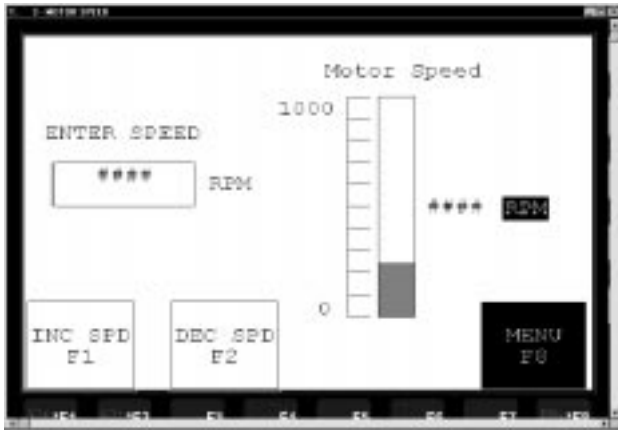
Keypad Terminal
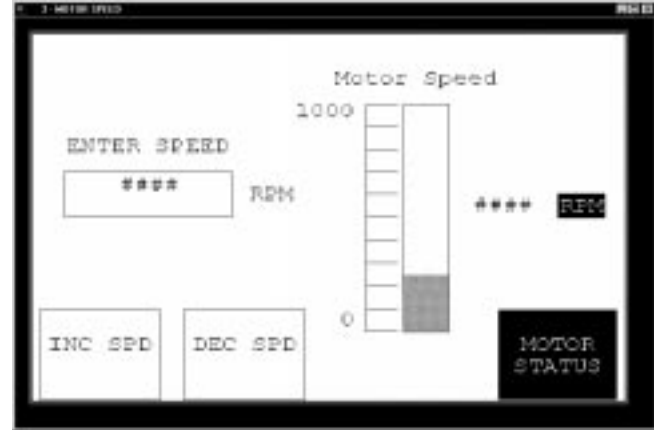
Touch Screen Terminal

The table below lists objects on the Motor Speed screen and each object's function. Object headings are created as background text.

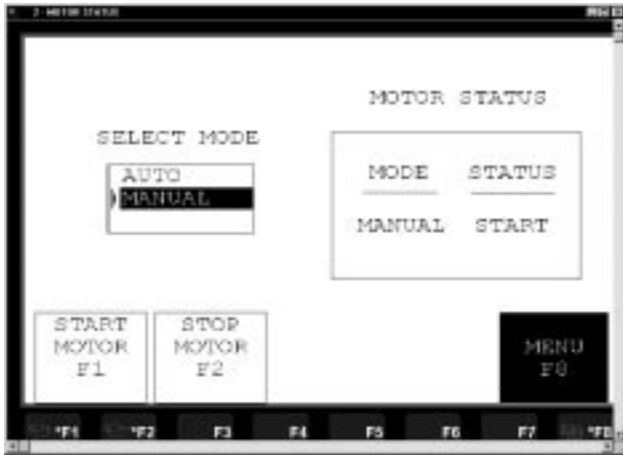| Object	Object Type	Function
ENTER SPEED #### RPM	Numeric Cursor Point with Background Text	Opens the scratchpad for entering a new motor speed (from 0 to 1000 rpm).
#### RPM	Numeric Data Display	Displays the current speed (0 to 1000 rpm) of the motor.
Motor Speed 1000 ... 0	Bar Graph and Scale with Background Text	Displays the current motor speed (0 to 1000 rpm) in a graphic form. The bar graph scale and tick-mark labels are created as separate objects.
INC SPD F1	Momentary Push Button (Normally Open)	Increases the speed of the motor when you press the F1 key or touch the screen object.
DEC SPD F2	Momentary Push Button (Normally Open)	Decreases the speed of the motor when you press the F2 key or touch the screen object.
Motor Status F8	Goto Screen Button	Displays the Motor Status screen when you press the F8 key (F5 on PV550 terminals) or touch the screen object.

Alarm Banner

The Alarm Banner is a global display that pops up over the Motor Status or Motor Speed screen when an alarm is triggered. It allows you to:

- read a message associated with the triggered alarm
- clear the Alarm Banner from the screen
- acknowledge an alarm and clear the banner from the screen.

Keypad Terminal

The table below lists objects on the Motor Speed screen and each object's function. The Message Display is a fixed object that cannot be deleted.

Object	Object Type	Function
MOTOR SPEED TOO LOW MOTOR SPEED TOO HIGH	Message Display	Triggers a message to display when the motor speed is too high or too low.
Clear F4	Clear Alarm Button	Clears the Alarm Banner from the screen when you press the F4 key or touch the screen object.
Ack F7	Ack Alarm Button	Acknowledges the alarm displayed in the Alarm Banner and clears the banner from the screen when you press the F7 key or touch the screen object.

Application Tags

The sample application has a collection of read/write tags that define how objects interact with SLC 500 or PLC controller addresses. The following table defines the attributes of each tag.

Tag Attributes	Description
Tag Name	Unique name identifying tag address
Data Type	Bit, 4BCD, Unsigned/Signed Integer, Bit Array, Character Array, Float
Array Size	Array size (length) of bit array
Description	General description of tag
Node Name	Name of controller associated with tag
Tag Address	Specifies data table word or bit
Initial Value	Value stored at tag address on powerup
Update Frequency	Rate at which tag address value is updated
Scaling[1]	Scale and offset scale values
Data Entry Limits[1]	High and low limits of data stored at tag address

[1] Fields display only if data type is 4BCD, Signed/Unsigned Integer, or IEEE Float.

Tags used by the DH-485 or DH+ application are stored in a tag database that is referenced by the project name GS. The GS project has 9 tags.

Tags used by the Remote I/O application are stored in a database referenced by the project GSRIO. The GSRIO project has 12 tags. Tags are created using the Tag Editor.
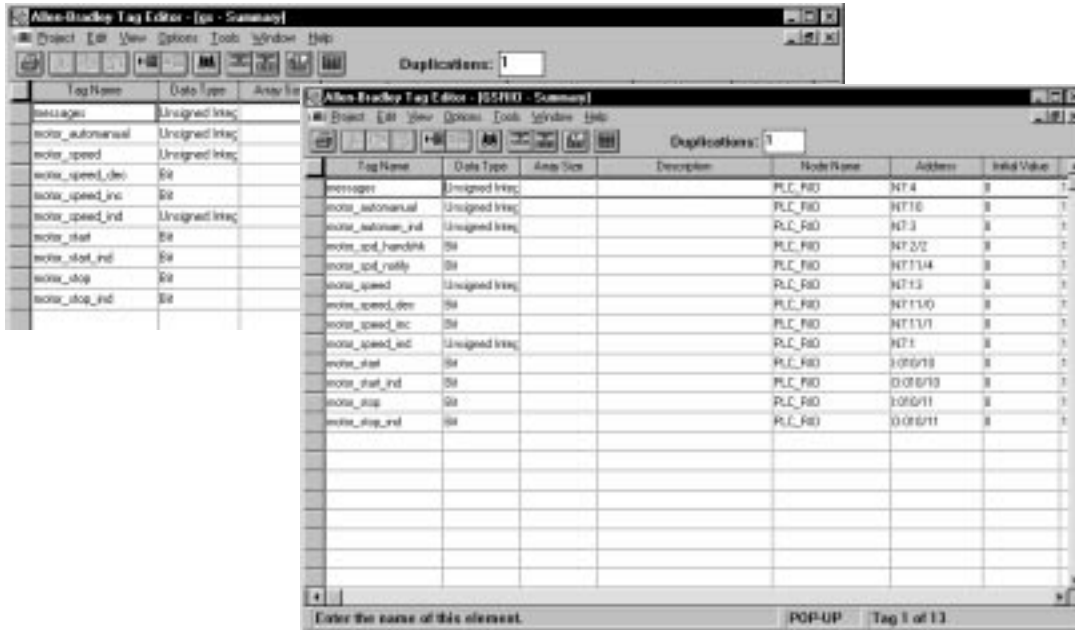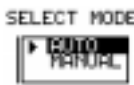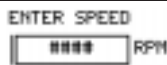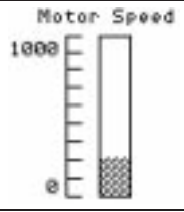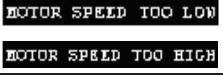
Objects that don't read or write to a controller address such as screen selector buttons and background text do not require a tag.

DH-485 or DH+ Application Tags

This section defines the GS project tags that are used by the DH-485 or DH+ application.

- For a DH-485 application, these tags read or write data to bit or integer files associated with an SLC 500 controller.
- For a DH+ application, these tags read or write data to bit or integer files associated with an SLC 500 or PLC 5/25 controller.
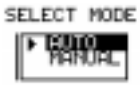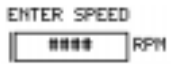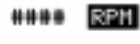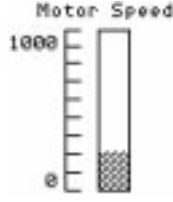
GS Project Tags for DH-485 or DH+ Application

This object	Uses this tag	To
START MOTOR F1	Motor_Start Motor_Start_Ind	Start the motor by setting bit B3:0/0 ON (1). Control state change by monitoring bit B3:0/4.
STOP MOTOR F2	Motor_Stop Motor_Stop_Ind	Stop the motor by setting bit B3:0/1 OFF (0). Control state change by monitoring bit B3:0/5.
STATUS START	Motor_Stop_Ind	Display the current status (START or STOP) of the motor by reading bit B3:0/5.
SELECT MODE ▶ AUTO MANUAL	Motor_AutoManual	Set the motor to AUTO or MANUAL mode by writing an unsigned integer value to N7:0.
MODE AUTO	Motor_AutoManual	Display the current mode (AUTO or MANUAL) of the motor by reading the data at N7:0.
ENTER SPEED #### RPM	Motor_Speed	Enter a new motor speed (0 to 1000 rpm) by writing an unsigned integer value to N7:1.
Motor Speed 1000 ... 0	Motor_Speed_Ind	Display the current motor speed in a graphic form by reading the data at N7:2.
DEC_SPD F2	Motor_Speed_Dec	Decrease the motor speed by setting bit B3:0/3 ON (1) and OFF (0).
INC_SPD F1	Motor_Speed_Inc	Increase the motor speed by setting bit B3:0/2 ON (1) and OFF (0).
MOTOR SPEED TOO LOW MOTOR SPEED TOO HIGH	Messages	Trigger a message to appear in the Alarm Banner by reading the trigger value at N7:3.

Remote I/O Application Tags

This section defines the GSRIO project tags that are used by the Remote I/O application. These tags read or write data to bit, integer and input/output files associated with a PLC 5/25 controller on a Remote I/O link.

GSRIO Project Tags for Remote I/O Application

This object	Uses this tag	To
START MOTOR F1	Motor_Start Motor_Start_Ind	Start the motor by setting bit I:010/10 ON (1). Control state change by monitoring bit O:010/10.
STOP MOTOR F2	Motor_Stop Motor_Stop_Ind	Stop the motor by setting bit I:010/11 ON (1). Control state change by monitoring bit O:010/11.
STATUS START	Motor_Stop_Ind	Display the current status (START or STOP) of the motor by reading bit O:010/11.
SELECT MODE ▶ AUTO MANUAL	Motor_AutoManual	Set the motor to AUTO or MANUAL mode by writing an unsigned integer value to N7:10.
MODE AUTO	Motor_AutoMan_Ind	Display the current mode (AUTO or MANUAL) of the motor by reading the data at N7:3.
	Motor_Speed	Enter a new motor speed (0 to 1000 rpm) by writing an unsigned integer value to N7:13.
ENTER SPEED #### RPM	Motor_Spd_Notify	When a new motor speed is entered, the bit at N7:11/4 is set ON (1). The scratch pad remains open until new motor speed is written to N7:13. The terminal clears bit N7:11/4 when the Motor_Spd_Handshk tag is set (ON) 1.
	Motor_Spd_Handshk	Sets bit N7:2/2 ON (1) when the new motor speed is written to the Motor_Speed tag at N7:13. The ladder logic program clears bit N7:2/2.
#### RPM	Motor_Speed_Ind	Display the current motor speed in numeric form (0 to 1000 rpm) by reading the data at N7:1.
Motor Speed 1000 ... 0	Motor_Speed_Ind	Display the current motor speed in a graphic form by reading the data at N7:1.
DEC_SPD F2	Motor_Speed_Dec	Decrease the motor speed by setting bit N7:11/0 ON (1) and OFF (0) in Manual Mode.
INC_SPD F1	Motor_Speed_Inc	Increase the motor speed by setting bit N7:11/1 ON (1) and OFF (0) in Manual Mode.
MOTOR SPEED TOO LOW MOTOR SPEED TOO HIGH	Messages	Trigger a message to appear in the Alarm Banner by reading the trigger value at N7:4.

Chapter **4**

Creating the Sample Application

Chapter Objectives

This chapter shows how to create the sample application and contains the following sections.

You can create the entire application or part of the application. The complete DH-485 (or DH+) and Remote I/O applications are provided on the installation disk and are stored in C:\AB\PBWIN\GS\

Starting PanelBuilder

PanelBuilder

PanelBuilder

To start PanelBuilder 900:

- For computers running Windows 3.x:
  - At the DOS prompt, type **win** and press ENTER.
  - Double-click the PanelBuilder group icon in the Program Manager.
  - Double-click the PanelBuilder icon.

- For computers running Windows 95:
  - Click once on the Start button. Place the cursor over Programs. You will see the Programs submenu.
  - Place the cursor over PanelBuilder. You will see the PanelBuilder submenu.
  - Click on the PanelBuilder icon.

The startup screen opens showing copyright and release information.
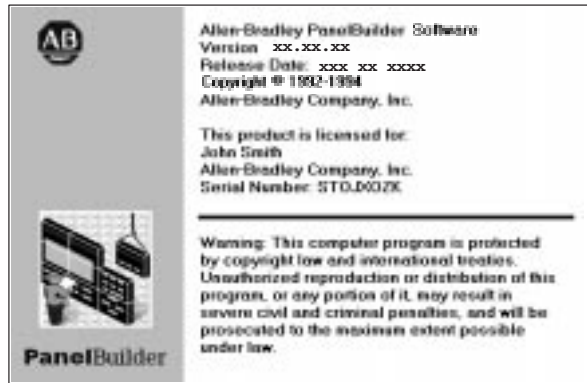
The PanelBuilder window opens. This is your workspace for creating application screens.

Click the Maximize button to enlarge the window.

Opening a New Application

File
New...
Open...
Workstation Setup...
Exit   Alt+F4

To open a new application file:

1. Choose New from the File menu or click ☐ on the tool bar.

The New Application dialog opens.

2. In the Application Name box, type Getting Started.

3. In the Project Name box, type:
   – GSRIO for a Remote I/O application
   – GS for a DH-485 or DH+ application

The project will contain tags and device information.

4. In the Terminal Name box, type PV550, PV600, PV900 or PV1400. This name identifies the terminal to the project.

5. Choose a specific PanelView terminal by selecting:
   – PV550, PV600, PV900M (Monochrome), PV900C (Color), PV1400 in the PV Type box
   – Keypad or Touch
   – Catalog Number and Firmware Version of terminal

The Ports area shows the communication port(s) and protocol(s) of the selected terminal.

Type Getting Started → Application Name: Getting Started

Type GSRIO or GS → Project Name: GSRIO

Type PV550, PV600, PV900 or PV1400 → Terminal Type Information
Terminal Name: PV900

Select PV550, PV600, PV900M, PV900C, PV1400 → Filter by
PV Type: PV900M

Select Keypad or Touch → Keypad / Touch / Keypad & Touch

Select Catalog No. of a Remote I/O, DH+ or DH-485 Terminal → Catalog and Version:
2711-K9A1 PV900M Keypad, FRN 3.00-3.xx
2711-K9A10 PV900M Keypad, FRN 3.00-3.xx
2711-K9A12 PV900M Keypad, FRN 3.00-3.xx
2711-K9A2 PV900M Keypad, FRN 3.00-3.xx
2711-K9A3 PV900M Keypad, FRN 3.00-3.xx

Communication port and protocol of selected terminal → Ports:
Physical: RIO   Protocol: RIO
Physical: RS232   Protocol: DF1

OK / Cancel / Description

6. Click the OK button.

The application file window opens showing the name of the application and the selected terminal type. Because the file does not contain any screens the Screens box is empty.

Getting Started
2711-K9A1 PV900M Keypad, FRN 3.00-3.xx
Screens:
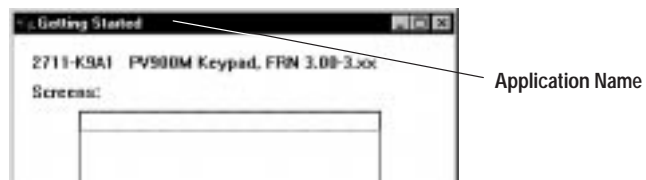
Application Name

Creating the Motor Status Screen

This section shows how to create the MOTOR STATUS screen which is the first application screen.

Select Mode Control List →
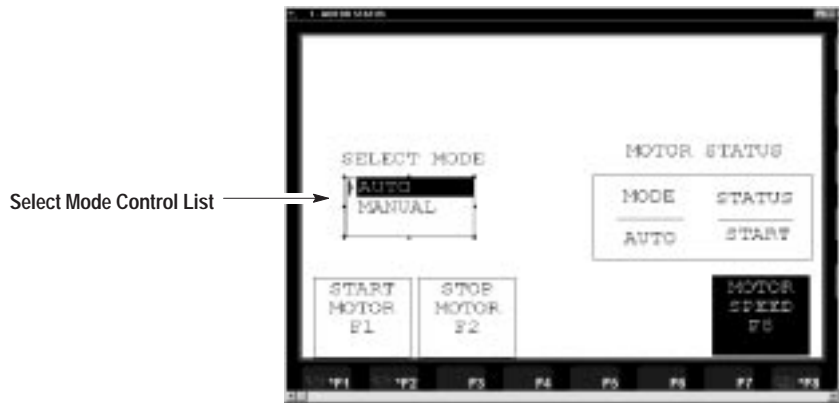
Procedures in this section show how to

- Open a new screen
- Set grid attributes
- Create a momentary push button to start the motor
- Create a momentary push button to stop the motor
- Create a screen button to display the Motor Speed screen
- Create a control list to select auto or manual mode
- Create control list keys for touch screen terminals only
- Create an indicator to show the auto/manual mode of the motor
- Create an indicator to show the start/stop status of the motor
- Close the Motor Status screen

Opening a New Screen
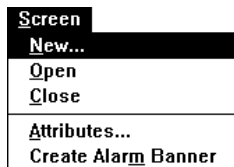
To create the MOTOR STATUS screen:

1. Choose New from the Screen menu or click 🖼 on the tool bar.

PanelBuilder assigns a name/number to each screen starting at 1.

2. Type Motor Status in the Name box.

Type Motor Status →

Background appears only on color terminals.
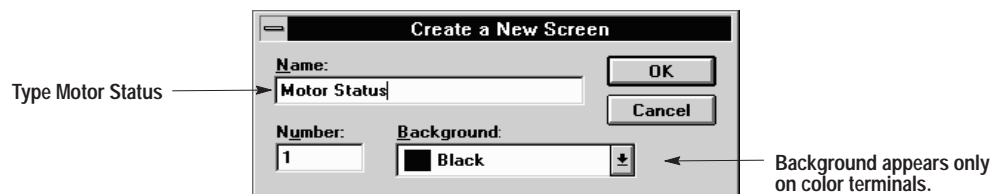
3. Click the OK button to open screen 1.

A blank application screen opens. The title bar shows the screen name and number.

▶ An * after the application file name in the title bar means the application has been modified but not saved.

Project Name ─────────────────────   Application File Name after Save

Title Bar ─────────

Click the Title Bar to move
the screen in the workspace   Screen Number amd Mame
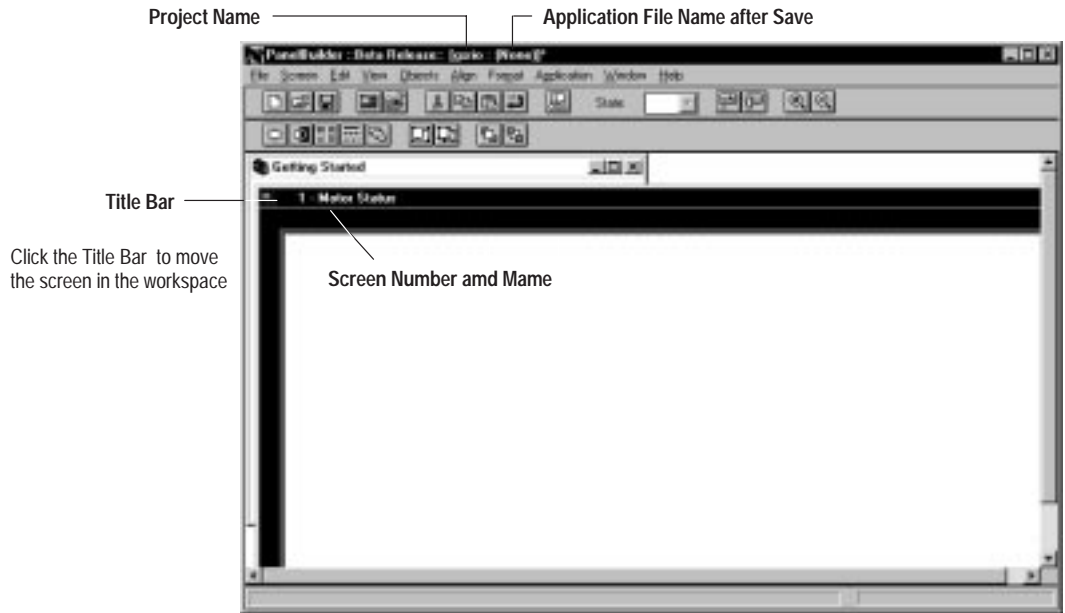
Setting Grid Attributes

For easier alignment and positioning of screen objects we recommend that you adjust the Grid Spacing.

Align
> **Grid**
> **Snap to Grid**
> **Grid Attributes...**
> **Touch Grid**
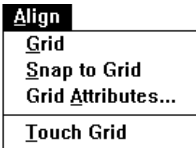
To set the grid attributes:

1. From the Align menu choose Grid Attributes.

The Grid Spacing dialog opens.

2. Click in the X Pixels box and replace 13 with 5.

3. Click in the Y Pixels box and replace 25 with 5.
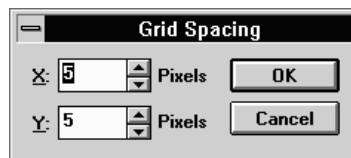
▶ These settings vary for each PanelView terminal type.

4. Click OK.

Creating the Motor Status Screen

Objects
Push Buttons   **Momentary**
                 Maintained
                 Latched
                 Multistate

Creating the Start Motor Push Button

To create the START MOTOR F1 **push button:**

1. From the Objects ▶Push Buttons submenu choose Momentary.

2. Position pointer (+) in lower left area of the screen, click the left mouse button and drag the pointer diagonally to size the button.

ST 0

3. Click the right mouse button to exit push button mode.

To set the properties of the push button:

1. Double-click the push button to open its dialog.

2. Set the properties as shown below.

Click Single Button ───▶

Select F1 ───▶

Type Motor_Start

Type Motor_Start_Ind
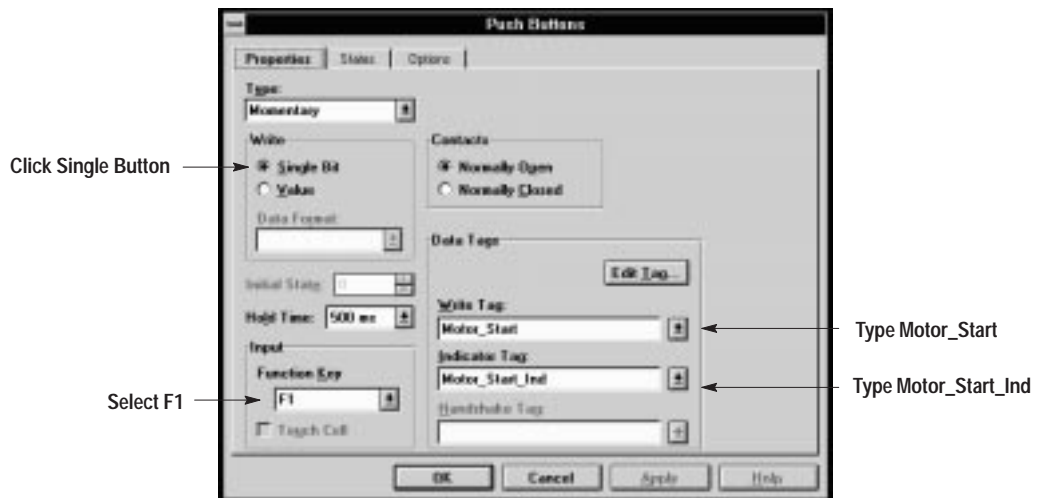
To configure the states of the Start Motor push button:

1. Click the States tab on the Push Buttons dialog.

A spreadsheet opens. Each row represents a push button state (row 0 is state 0, row 1 is state 1).

State 0 ——
State 1 ——

Use the horizontal scroll bar to
display fields not in view. —

State 0
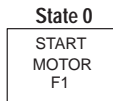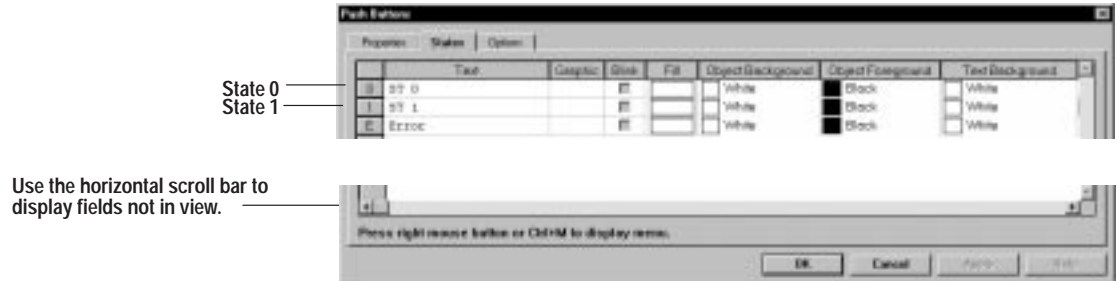
START
MOTOR
F1

2. Edit the fields for state 0 (row 0) as follows:

- Double-click in the Text field and:
  - type START, then press Enter (/*R*/ indicates return)
  - type MOTOR, then press Enter (/*R*/ indicates return)
  - type F1
- Click in the Text Size field and select 16x24 from the list. Don't change the text size for PV550 applications.

For Color

Select these colors for state 0. Click in each field and select:

- Light Green for the Object Background
- Black for the Object Foreground
- Light Green for the Text Background
- Black for the Text Foreground

State 1
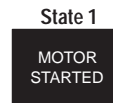
MOTOR
STARTED

3. Edit the fields for state 1 (row 1) as follows:

- Double-click in the Text field, press Enter (/*R*/), then type MOTOR STARTED
- Select Black for the Object Background
- Select White for the Object Foreground
- Select Black for the Text Background
- Select White for the Text Foreground
- Click in the Text Size field and select 16x24 from the list. Don't change the text size for PV550 applications.
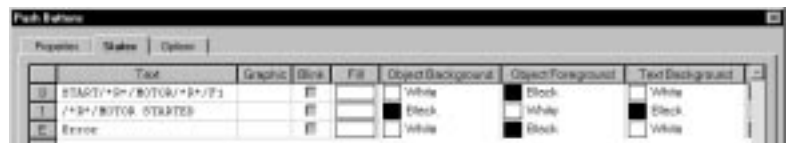
Creating the Motor Status Screen

For Color   Select these colors for state 1 (row 1):

- White for the Object Background
- White for the Object Foreground
- White for the Text Background
- Green for the Text Foreground

4. Click the OK button to exit the Push Buttons dialog.

An asterisk (*) appears if the text exceeds the size of the object.

5. Resize the object, if necessary, to fit all the text.

Creating the Stop Motor Push Button

The Stop Motor push button is created using the Copy and Paste functions.

```
┌────────┬────────┐
│ START  │ STOP   │
│ MOTOR  │ MOTOR  │
│ F1     │ F2     │
└────────┴────────┘
```

To create the Stop Motor push button:

1. Select [START MOTOR F1] (if not selected).

2. From the Edit menu choose Copy or click 📋 on the tool bar.

3. From the Edit menu choose Paste or click 📋 on the tool bar.

An outline of the copied button appears.

4. Move the outline to the right and click the left mouse button to paste the button.

```
Edit
Undo                        Ctrl+Z
Cut                         Ctrl+X
Copy                        Ctrl+C
Paste                       Ctrl+V
Delete                      Del
Select All
Bring To Front
Send To Back
Bring Dynamic Objects To Front
Group
Ungroup
Regroup
Use Existing Text...
Object Attributes...
Set Object Color Defaults
```

```
┌────────┬────────┐      ┌────────┬────────┐
│ START  │        │      │ START  │ START  │
│ MOTOR  │        │      │ MOTOR  │ MOTOR  │
│ F1     │        │      │ F1     │ F1     │
└────────┴────────┘      └────────┴────────┘
```

To set the properties of the Stop Motor push button:

1. Double-click the pasted push button to open its dialog.

2. Set the properties as shown below.

Select F2

Type Motor_Stop

Type Motor_Stop_Ind

Creating the Motor Status Screen

To configure the states of the Stop Motor push button:

1. Click the States tab on the Push Buttons dialog.

	Text	Graphic	Blink	Fill	Object Background
0	START/*R*/MOTOR/*R*/F1		☐		☐ White
1	/*R*/MOTOR STARTED		☐		■ Black
E	Error		☐		☐ White
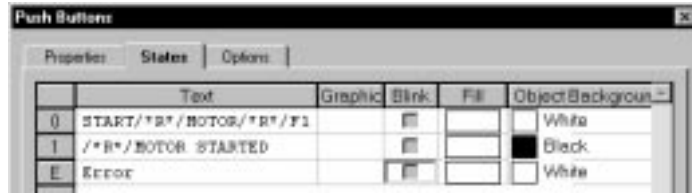
State 0

```
STOP
MOTOR
F2
```

2. Double-click in the Text field for state 0 (row 0) and replace START/*R*/MOTOR/*R*/F1 with STOP/*R*/MOTOR/*R*/F2.

Remember, /*R*/ indicates a carriage return.

For Color   Select these colors for state 0 (row 0):
- Light Red for the Object Background
- Black for the Object Foreground
- Light Red for the Text Background
- White for the Text Foreground

State 1

```
MOTOR
STOPPED
```

3. Double-click in the Text field for state 1 (row 1) and replace /*R*/MOTOR STARTED with /*R*/MOTOR STOPPED.
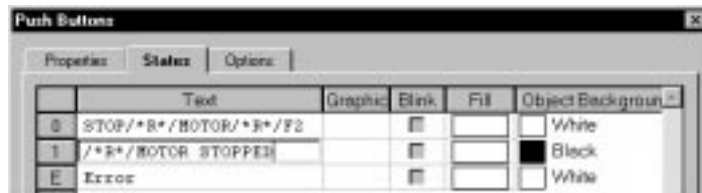
	Text	Graphic	Blink	Fill	Object Background
0	STOP/*R*/MOTOR/*R*/F2		☐		☐ White
1	/*R*/MOTOR STOPPED		☐		■ Black
E	Error		☐		☐ White

For Color   Select these colors for state 1 (row 1):
- White for the Object Background
- White for the Object Foreground
- White for the Text Background
- Light Red for the Text Foreground

4. Click the OK button to close the Push Buttons dialog.

Creating the Motor Speed Screen Button

To create the Motor Speed screen button:

1. From the Objects ▶Screen Selectors submenu choose Goto.

2. Position pointer (+) in the lower right area of the screen, hold down the left mouse button and drag pointer diagonally to size the button.

3. Click the right mouse button to exit screen button mode.

4. For monochrome applications, choose Toggle Fore/Background from the Format menu or click [▣] on the format bar.

For Color   Select Light Blue from the Format ▶Background Color menu

To change the inner text of the screen button:

1. From the Format menu, choose Inner Text or click the Inner Text [⬚] tool on the tool bar.

Don't worry about this number. It's not important. ———

Text: ➤ *7*   GoTo

2. Replace GoTo with MOTOR SPEED F8

Text: 7   MOTOR/*R*/SPEED/*R*/F8
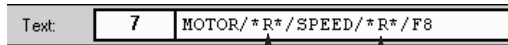
ENTER key pressed twice

3. From the Format ▶Text Size menu choose 16x24.

Or click [A¡] on the format bar and choose 16x24 from the menu.

Don't change the text size for PV550 applications.

For Color   Select Light Blue from the Format ▶Background Color menu

4. Click [⬚] to exit inner text mode.

Creating the
Motor Status Screen

Creating a Goto Config Screen Button

▶

Skip this section if you have a PanelView 900 or 1400 Keypad terminal.

PanelView 900/1400 Touch Screen terminals require a Goto Config Screen button on the screen. This button enables the operator to display the terminal's Configuration Mode Menu while running the application.

CONFIG
SCREEN
button

To create the CONFIG SCREEN button:

1. From the Objects ▶Screen Selectors submenu choose Goto Config Screen.

2. Position pointer (+) to the left of the Motor Speed button, hold down the left mouse button and drag pointer diagonally to size the button.

3. Click the right mouse button to exit screen button mode.

4. From the Format menu choose Toggle Fore/Background or click [icon] on the format bar.

For Color   Select Red from the Format ▶Background Color menu.

5. From the Format menu choose Inner Text or click [icon]

6. Replace Goto Config Screen with CONFIG SCREEN.

The /∗R∗/ characters are inserted when you press ENTER.

Text: **36**   /*R*/CONFIG/*R*/SCREEN

Don't worry if this number is different.

ENTER key pressed twice
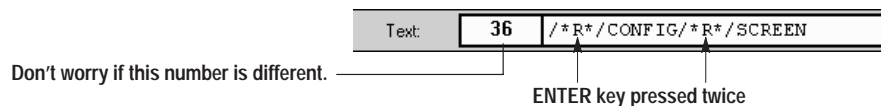
7. From the Format ▶Text Size menu choose 16x24.

Or click [icon] on the format bar and choose 16x24 from the menu.

Don't change the text size for PV550 applications.

For Color   Select Red from the Format ▶Background Color menu.

8. Click [icon] to exit inner text mode.

Creating the Select Mode Control List

To create the Select Mode control list:

Select Mode Control List →
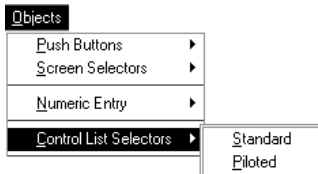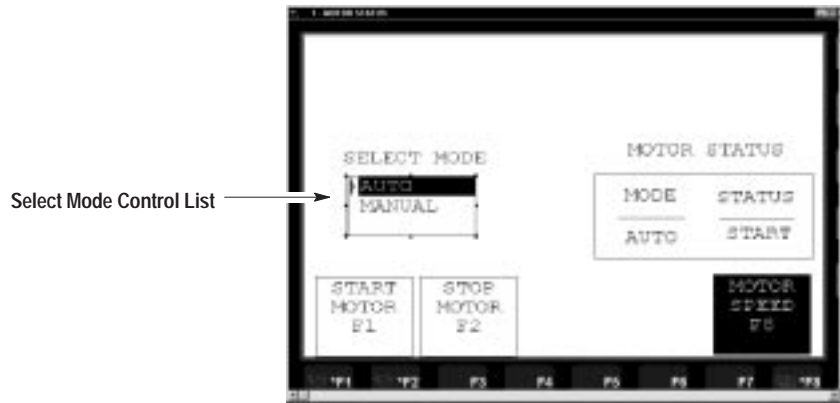
1. From the Objects ▸Control List Selectors menu choose Standard.

2. Position the pointer (+), hold down the left mouse button and drag the pointer to size the object.
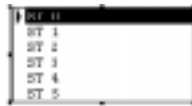
3. Click the right mouse button to exit control list selector mode.

For Color • Select Blue from the Format ▸Foreground Color menu.

• Select Light Cyan from the Format ▸Background Color menu.

To set the properties of the Select Mode control list:

1. Double-click the control list object to open its dialog.

2. Set the properties as shown below.

Type Motor_Automanual →

Click Wrap Around check box →
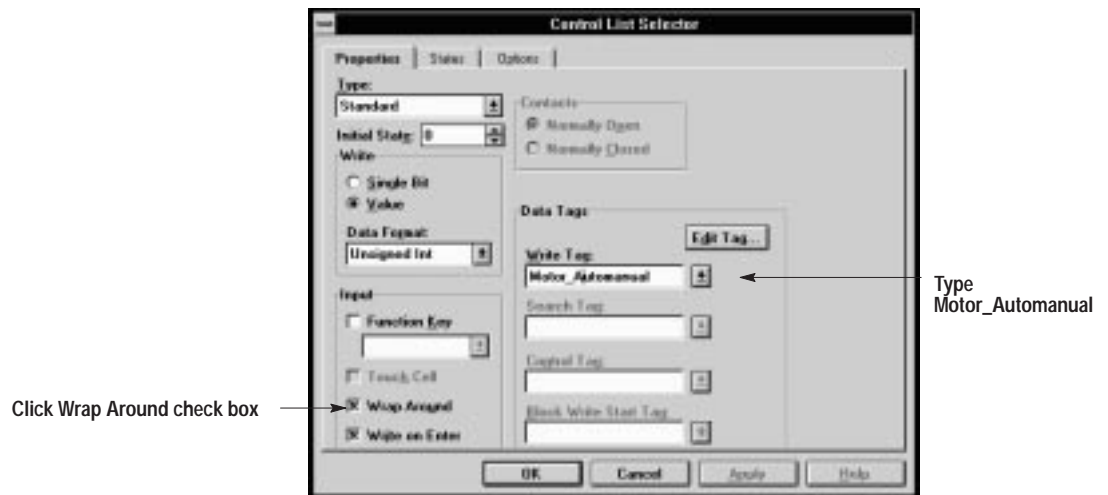
Creating the Motor Status Screen

To edit the states of the Select Mode control list:

1. Click the States tab on the Control List Selector dialog.

Delete states (rows) 2 – 15
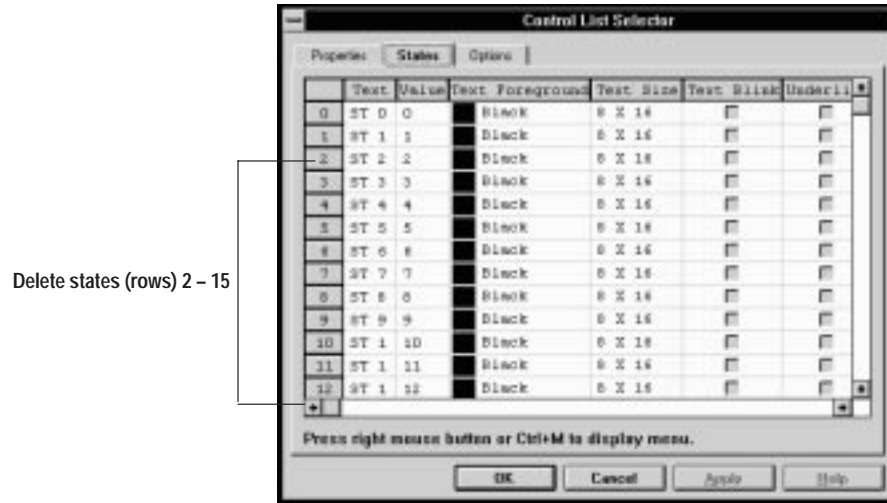
2. Delete states 2 – 15. These states are not used.

- click on row number 2.
- hold down the left mouse button and drag the mouse until rows 2 through 15 are selected.
- click the right mouse button and choose Delete State from the popup menu.

3. Edit the fields for state 0 (row 0) as follows:

- In the Text field, replace ST 0 with AUTO.
- In the Text Size field, select 16x24 from the list box. Don't change the text size for PV550 applications.
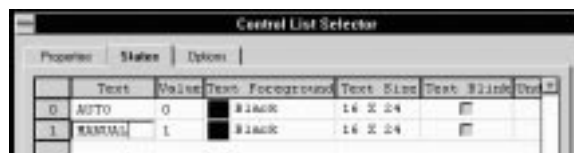
For Color   Select Blue from the Text Foreground field.

4. In the Text field for state 1 (row 1) replace ST 1 with MANUAL.

For Color   Select Blue from the Text Foreground field.

5. Click OK to close the dialog.

The object should look like this.
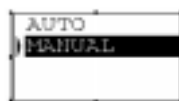
An asterisk (*) appears if the text exceeds the size of the object.

6. Resize the object, if necessary, to fit all the text.

Objects

Push Buttons	▶
Screen Selectors	▶
Numeric Entry	▶
Control List Selectors	▶
Indicators	▶
Numeric Data Display	
Bar Graph	
Scale	
Message Display	
Graphics	**▶**
List Keys	▶
Alarm History	
Alarm Buttons	▶
Global Object...	

Line
Connected Line
Rectangle
Ellipse
Circle
Freeform
Text
Graphic Image
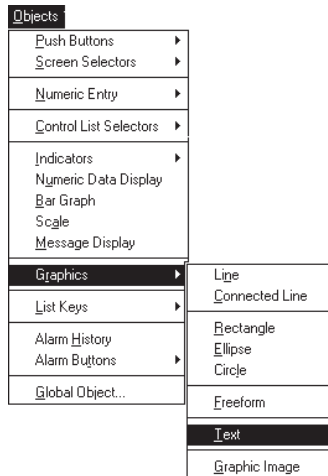
To create the SELECT MODE heading for the control list:

```
SELECT MODE
 ┌────────────┐
 │ AUTO       │
 │▌MANUAL     │
 └────────────┘
```
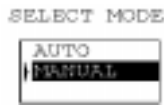
From the Objects ▶Graphics submenu choose Text.

7. Position the pointer (+) above the list, hold down the left mouse button and drag the pointer to size the text block.

8. In the Text box, type SELECT MODE.

Text:	24	SELECT MODE

Don't worry if this number is different.

9. Click [A̲] on the format bar and choose 16x24. Don't change the text size for PV550 applications.

An asterisk (*) appears if the text exceeds the size of the object.

For Color
- Select Light Cyan from the Format ▶Foreground Color menu.
- Select Black from the Format ▶Background Color menu.

10. Click the right mouse button to exit text object mode.

11. Click [🔤] to exit inner text mode.

12. Resize the text block, if necessary, to fit all the text.

Creating the Motor Status Screen

Creating Control List Keys

▶ Skip this section if you have a PanelView keypad terminal.

PanelView 900 Touch Screen terminals require you to place the Move Up, Move Down, and Enter list keys on the screen. These keys enable the operator to move the cursor in the control list and select an option.
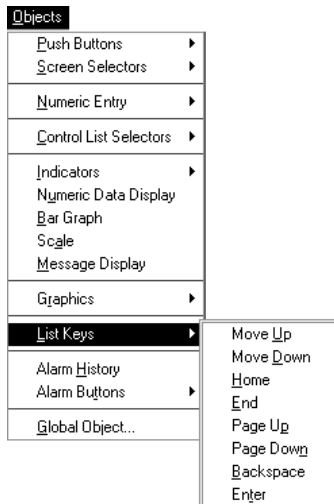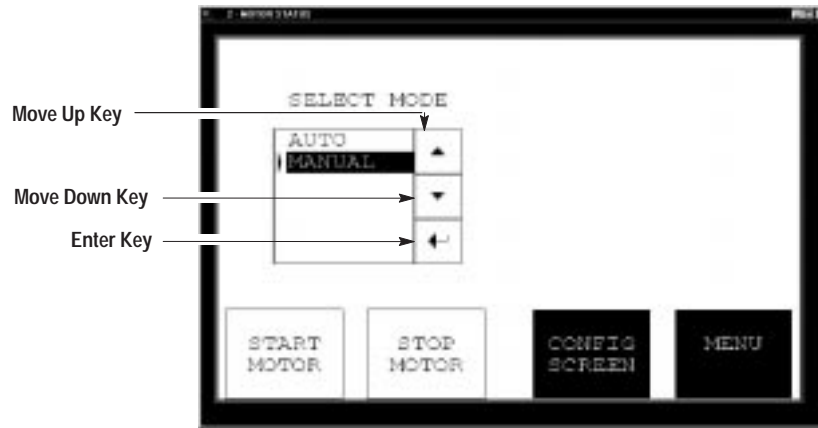
To create the Move Up list key:

1. From the Objects ▶List Keys submenu choose Move Up.

2. Position the pointer at the upper right corner of the Select Mode control list and click the left mouse button. Size and move the key if necessary.

For Color
- Select Blue from the Format ▶Foreground Color menu.
- Select Light Cyan from the Format ▶Background Color menu.
- Click the Inner Graphic tool on the tool bar [icon], select Light Cyan for the Format ▶Background Color and Blue for the Object ▶ Foreground Color, then click [icon] again.

To create list the Move Down list key:

1. From the Objects ▶List Keys submenu choose Move Down.

2. Position the pointer below the Move Up key and click the left mouse button. Size and move the key if necessary.

For Color   Apply same colors as the Move Up key.

To create the Enter list key:

1. From the Objects ▶List Keys submenu choose Enter.

2. Position the pointer below the Move Down key and click the left mouse button. Size and move the key if necessary.

For PV900 Color   Apply same colors as the Move Up key.

Creating the Mode Indicator

Select Mode Control List ——→   SELECT MODE | MOTOR STATUS   ←—— Multistate Indicators
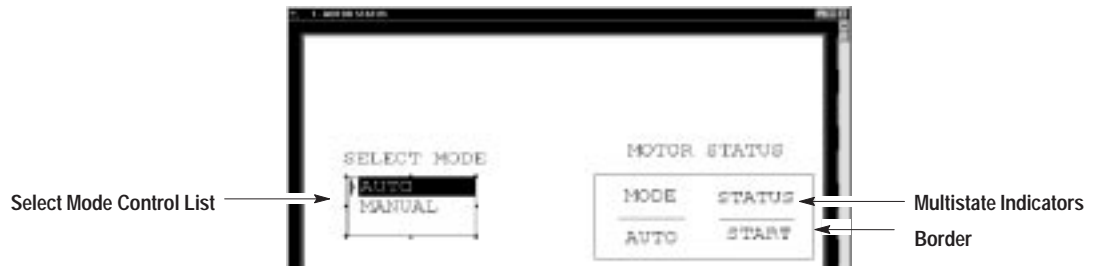
Border

The Motor Status box contains 2 indicators:

- MODE indicator (displays Auto/Manual mode of motor)
- STATUS indicator (displays Start/Stop status of motor)

To create the border around the indicators:

1. From the Objects ▸Graphics submenu choose Rectangle.

2. Position the pointer (+) where you want to start drawing the upper left corner of the shape.

3. Hold down the left mouse button and drag the pointer to size the shape. Release the mouse button when the shape is the right size.

4. Click the right mouse button to exit rectangle mode.
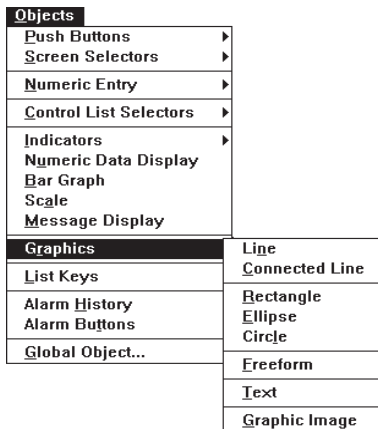
You will create the status indicators inside the rectangle.

Objects
Push Buttons	▸
Screen Selectors	▸
N**u**meric Entry	▸
Control List Selectors	▸
Indicators	▸
N**u**meric Data Display	
Bar Graph	
Sc**a**le	
Message Display	
Graphics	
List Keys	
Alarm **H**istory	
Alarm Bu**t**tons	
Global Object...	

Li**n**e
Connected Line
Rectangle
Ellipse
Cir**c**le
Freeform
Text
Graphic Image

For Color   Select Yellow from the Format ▸Background Color submenu.

Creating the Motor Status Screen

To create the MODE indicator:

```
MODE
AUTO
```
← Mode indicator
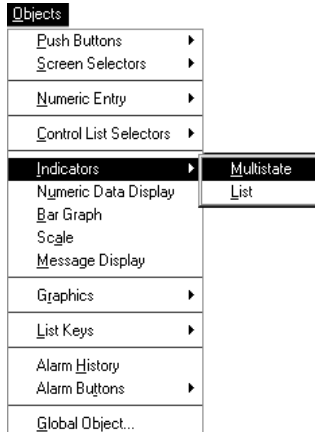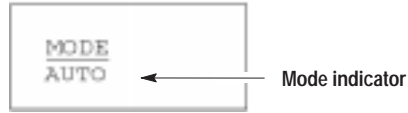
1. From the Objects ▶Indicators submenu choose Multistate.

2. Position the pointer (+) in the lower left area of the box, hold down the left mouse button and drag the pointer to size the indicator.

```
ST 0
```

Objects

Push Buttons	▶
Screen Selectors	▶
Numeric Entry	▶
Control List Selectors	▶
Indicators	▶	Multistate
Numeric Data Display		List
Bar Graph	
Scale	
Message Display	
Graphics	▶
List Keys	▶
Alarm History	
Alarm Buttons	▶
Global Object...	
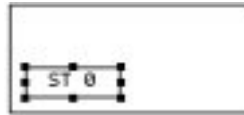
3. Click the right mouse button to exit multistate indicator mode.

4. Choose None from the Format ▶Line Type submenu.

   Or click ▦ on the Format bar and choose None.

To set the properties of the MODE indicator:

1. Double-click the indicator object to open its dialog.

2. Set the properties as shown below.

Multistate Indicator

| Properties | States | Options |

Read
- ○ Single Bit
- ○ Least Significant Bit
- ● Value   ← Click Value

Trigger State 0 When:
- ● Bit = 0
- ○ Bit = 1

□ Print

Data Format
Unsigned Int

Read Tag:
Motor_AutoMan_Ind   Edit Tag...

Type Motor_AutoMan_Ind (for Remote I/O)
or Motor_AutoManual (for DH-485)

[OK]   [Cancel]   [Apply]   [Help]
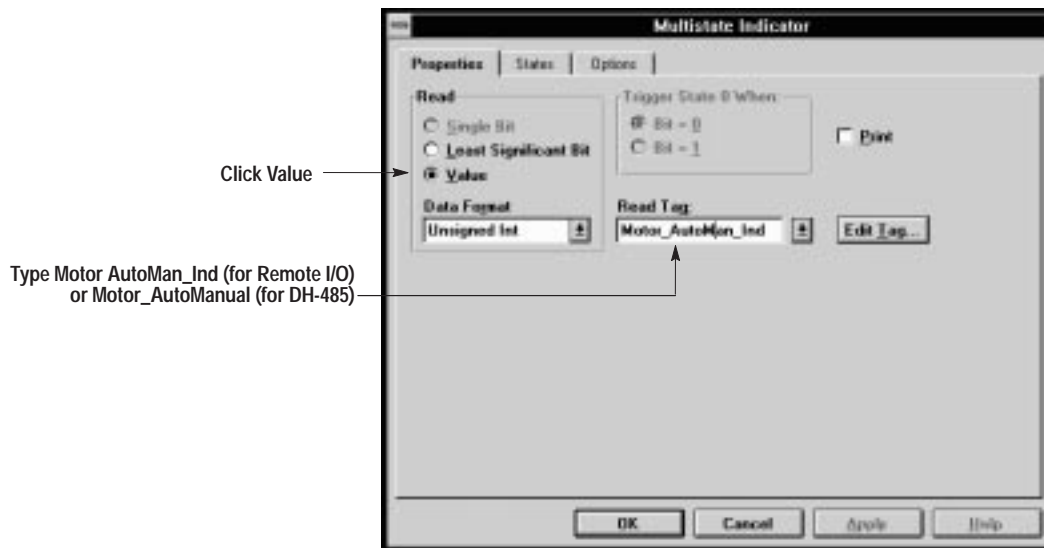
To configure the states of the MODE indicator:

1. Click the States tab on the Multistate Indicator dialog.
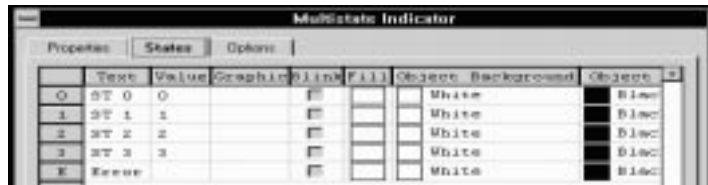
2. Delete states 2 and 3. These states are unused.
   - click on row number 2.
   - hold down the left mouse button and drag the mouse until rows 2 and 3 are selected.
   - click the right mouse button and choose Delete State from the popup menu.

3. Edit the fields for state 0 (row 0) as follows:
   - In the Text field, replace ST 0 with AUTO.
   - In the Text Size field, select 16x24 from the list box. Don't change the text size for PV550 applications.

For Color   Select these colors for state 0 (row 0).
   - Yellow for the Object Background
   - Blue for the Object Foreground
   - Yellow for the Text Background
   - Cyan for the Text Foreground

4. Edit the fields for state 1 (row 1) as follows:
   - In the Text field, replace ST 1 with MANUAL.
   - In the Text Size field, select 16x24 from the list box. Don't change the text size for PV550 applications.
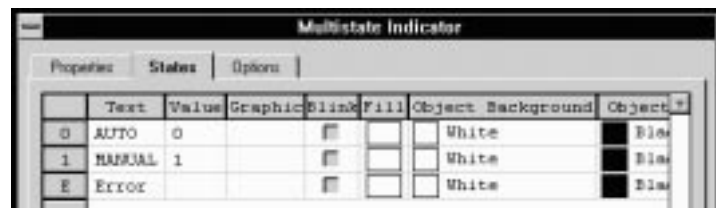
For Color   Select these colors for state 1 (row 1).
   - Yellow for the Object Background
   - Black for the Object Foreground
   - Yellow for the Text Background
   - Cyan for the Text Foreground

5. Click OK to exit the dialog.

An asterisk (*) appears if the text exceeds the size of the object.

6. Resize the object, if necessary, to fit all the text.

Creating the Motor Status Screen

Objects
- Push Buttons ▶
- Screen Selectors ▶
- Numeric Entry ▶
- Control List Selectors ▶
- Indicators ▶
- Numeric Data Display
- Bar Graph
- Scale
- Message Display
- Graphics ▶
  - Line
  - Connected Line
  - Rectangle
  - Ellipse
  - Circle
  - Freeform
  - Text
  - Graphic Image
- List Keys ▶
- Alarm History
- Alarm Buttons ▶
- Global Object...
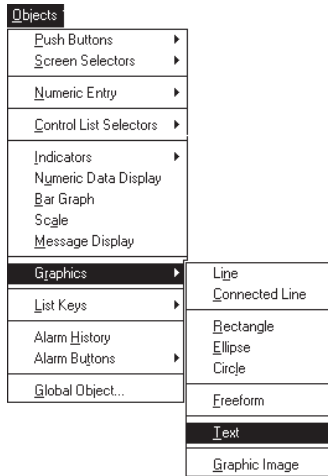
To create the MODE heading for the MODE indicator:

MODE
AUTO ← Heading

1. From the Objects ▶Graphics submenu choose Text.

2. Position the pointer (+) above the indicator, hold down the left mouse button and drag the pointer to size the text block.

3. In the Text box, type MODE.

Text: **30** MODE

Don't worry if this number is different.

4. Click **A** on the format bar to underline the text.

5. Click **A⁞** on the format bar and choose 16x24. Don't change the text size for PV550 applications.

For Color
- Choose Black from the Format ▶Foreground Color menu.
- Choose Yellow from the Format ▶Background Color menu.

6. Click the right mouse button to exit text mode.

7. Click 🖳 to exit inner text mode.

8. Resize the text block, if necessary, to fit all the text.

Creating the Status Indicator

Status Indicator

To create the STATUS indicator:

1. Select the MODE indicator and its heading, Hold down the SHIFT key and click on the Mode indicator object and the heading.

   Handles appear on both objects.
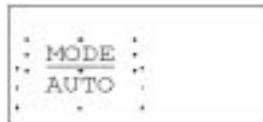
2. Click the Copy [icon] tool.

3. Click the Paste [icon] tool.

4. Move the outline to the right of the MODE indicator and click the left mouse button to paste the objects.
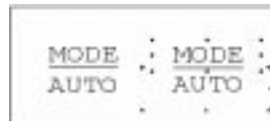
5. Deselect the objects by clicking anywhere outside border.

Creating the Motor Status Screen

To set the properties of the STATUS indicator:

1. Double-click on the word AUTO of the pasted indicator to open its dialog.

```
MODE    MODE
AUTO    AUTO  ←——— Pasted indicator
```

2. Set the properties as shown below.

Click Single Bit ——→

Type Motor_Stop_Ind ——
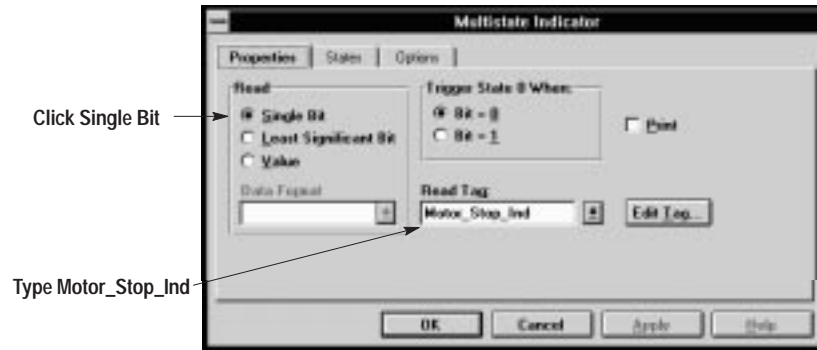
To configure the states of the STATUS indicator:

1. Click the States tab of the Multistate Indicator dialog.

	Text	Value	Graphic	Blink	Fill	Object Background	Object
0	AUTO	0		☐		White	Bla
1	MANUAL	1		☐		White	Bla
E	Error			☐		White	Bla
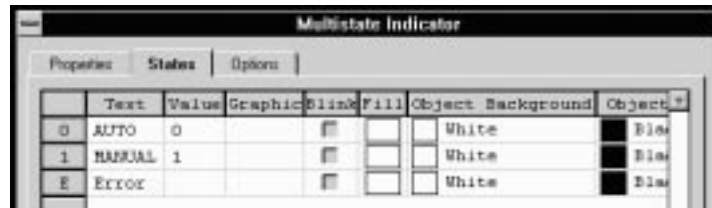
2. In the Text field for state 0, replace AUTO with START.

	Text	Graphic	Blink	Fill	Object Background	Object Fore
0	START		☐		White	Black
1	STOP		☐		White	Black
E	Error		☐		White	Black
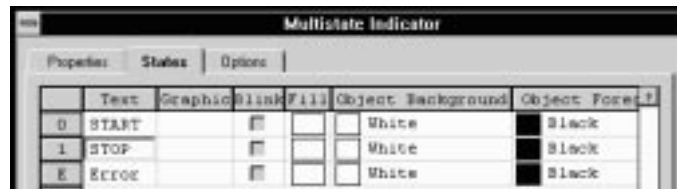
For Color   Select these colors for state 0 (row 0):

- Yellow for the Object Background
- Green for the Object Foreground
- Yellow for the Text Background
- Green for the Text Foreground

3. In the Text field of State 1, replace MANUAL with STOP.

For Color Select these colors for state 1 (row 1):

- Yellow for the Object Background
- Blue for the Object Foreground
- Yellow for the Text Background
- Light Red for the Text Foreground

4. Click OK to close the dialog.

An asterisk (*) appears if the text exceeds the size of the object.

5. Resize the object, if necessary, to fit all the text.

To create the STATUS heading for the indicator:

1. Select the pasted heading.

Pasted heading
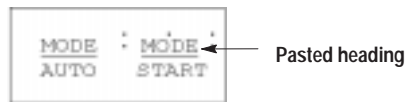
2. Click the Inner Text tool.

3. In the Text box, replace MODE with STATUS.
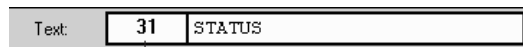
Don't worry if this number is different.

4. Click to exit inner text mode.

5. Resize the text block, if necessary, to fit all the text

Creating the Motor Status Screen

To create MOTOR STATUS above the indicator box:
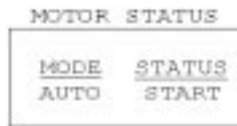
```
MOTOR  STATUS

MODE    STATUS
AUTO    START
```

1. From the Objects ▶Graphics submenu choose Text.

2. Position the pointer (+) above the indicator box, hold down the left mouse button and drag the pointer to size the text block.

3. In the Text box, type MOTOR STATUS.
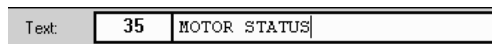
Text:	35	MOTOR STATUS

Don't worry if this number is different.

4. Click ![Ai] on the format bar and choose 16x24. Don't change the text size for PV550 applications.

   For Color
   - Choose Yellow from the Format ▶Foreground Color submenu.
   - Choose Black from the Format ▶Background Color submenu.

5. Click the right mouse button to exit text object mode.

6. Click ![icon] to exit inner text mode.

7. Resize the text block if necessary.

Closing the Motor Status Screen

Screen
New...
Open
Close
Attributes...
Create Alarm Banner
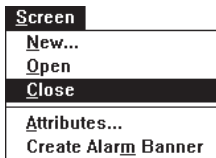
To close the MOTOR STATUS screen:

Choose Close from the Screen menu.

Or double-click the control-menu box on the screen.

Control_menu box ────▶ 1 - MOTOR STATUS

The Application File Window now shows 1 screen.

```
Getting Started

2711-K9A1   PV900M Keypad, FRN 3.00-3.xx
Screens:
    1 - Motor Status
```

Creating the Motor Speed Screen

This section shows how to create the MOTOR SPEED screen.
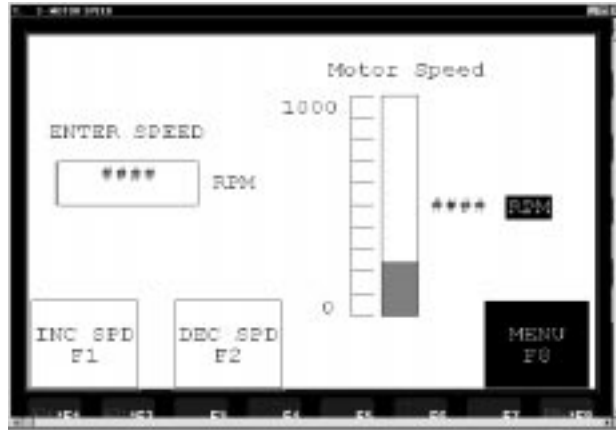
Procedures in this section show how to:

- open the toolbox and color palette
- open a new screen
- create a momentary push button to increase the motor speed
- create a momentary push button to decrease the motor speed
- create a screen button to return to the Motor Status screen
- create a bar graph to show the current speed in graphic form
- create a numeric entry object for entering the motor speed
- create a numeric data display to show the current speed
- linking the Motor Speed screen to the Motor Status screen
- close the Motor Speed screen

Opening the Toolbox and Color Palette

When creating the MOTOR SPEED screen, objects are selected from a tool box and some colors are selected from the color palette (for color terminals).

To open the Toolbox and Color Palette:

Choose Toolbox and then Color Palette from the View menu.

View
√ <u>T</u>ool Bar
√ <u>S</u>tatus Bar
T<u>o</u>olbox
<u>I</u>SA Symbols
<u>C</u>olor Palette
<u>A</u>larm Banner Position
<u>K</u>eypad
<u>F</u>ull Size
<u>Z</u>oom In
Zoo<u>m</u> Out
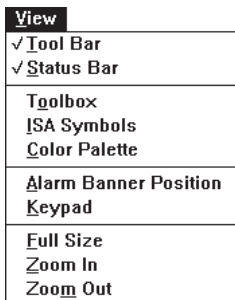
Move Toolbox or Palette by clicking title bar and dragging box to a new location.

Use the Top Row to select Foreground Colors

View Box updates as Foreground and Background colors are selected

Use the Bottom Row to select Background Colors

Creating the
Motor Speed Screen

Opening a New Screen

To create the MOTOR SPEED application screen:

1. Choose New from the Screen menu or click 🔳

2. Type MOTOR SPEED in the Name box of the dialog.

3. Click OK to close the dialog and open screen 2.

Creating the Increase Speed Push Button

To create the Increase Speed push button:

1. Click the Momentary Push Button tool 🔲 in the toolbox.

2. Position the pointer (+) at the lower left corner of the screen, click the left mouse button and drag the pointer horizontally to size the button.
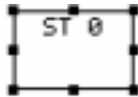
3. Click the right mouse button to exit push button mode.

Or click the selection [▶] tool on the toolbox.

To set the properties of the push button:

1. Double-click the push button to open its dialog.

2. Set the properties as shown below.

To configure the states of the Increase Speed push button:

1. Click the States tab on the Push Buttons dialog.
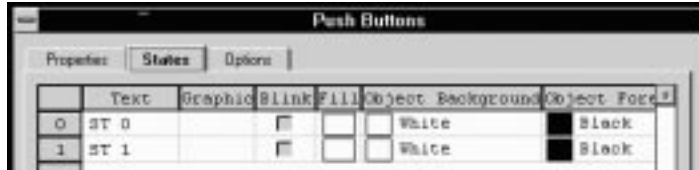
State 0

INC SPD
F1

2. Edit the fields for state 0 (row 0) as follows:

- In the Text field, replace ST 0 with /*R*/ INC SPD/*R*/F1
- In the Text Size field, select 16x24 from the list box. Don't change the text size for PV550 applications.
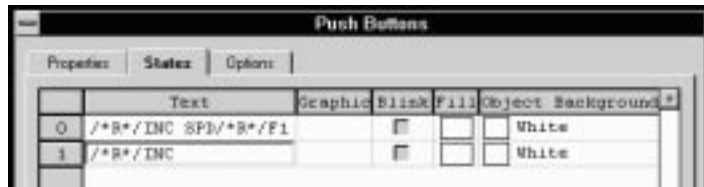
For Color   Select these colors for state 0 (row 0).

- Cyan for the Object Background
- White for the Object Foreground
- Cyan for the Text Background
- White for the Text Foreground

State 1

INC

3. In the Text field for State 1, replace ST 1 with /*R*/INC.

For Color   Select these colors for state 1 (row 1).

- White for the Object Background
- Cyan for the Object Foreground
- White for the Text Background
- Cyan for the Text Foreground

4. Click OK to exit the dialog.

An asterisk (*) appears if the text exceeds the size of the object.

5. Resize the object, if necessary, to fit all the text.

Creating the Motor Speed Screen

Creating the Decrease Speed Push Button

To create the Decrease Speed push button:

1. Select INC SPD F1 (if not selected).

2. Click the Copy 📋 tool.

3. Click the Paste 📋 tool.

4. Move outline of object to the right and click the left mouse button to paste the object.

To set the properties of the Decrease Speed push button:

1. Double-click the pasted object to open its dialog.

2. Set the properties as shown below.
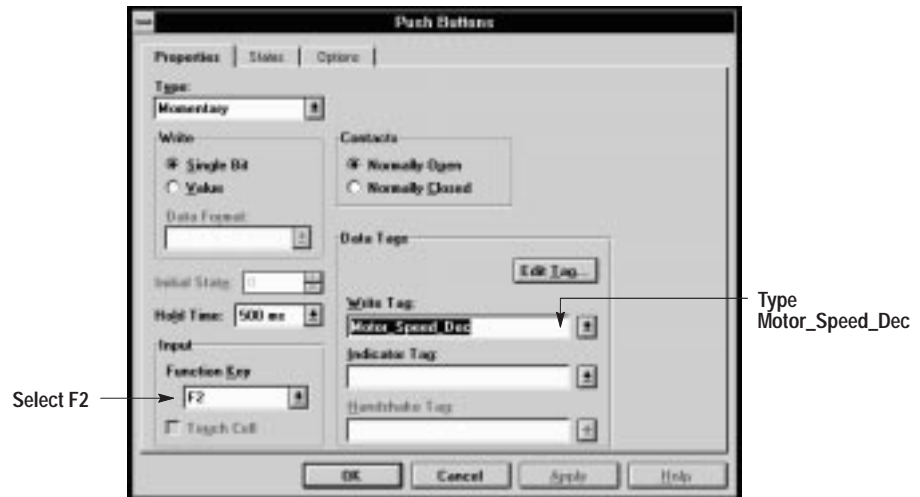
To configure the states of the copied button:

1. Click the States tab on the Push Buttons dialog.

State 0

DEC SPD
F2

State 1

DEC
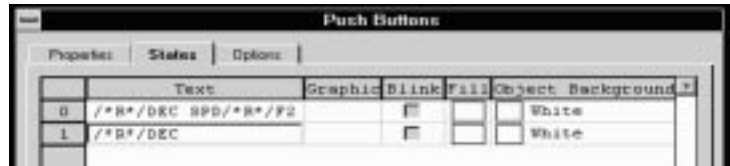
2. In the Text field of state 0, replace /*R*/INC SPD/*R*/F1 with /*R*/DEC SPD/*R*/F2

3. In the Text field of state 1, replace /*R*/INC with /*R*/DEC

4. Click OK to close the dialog.

Creating the Motor Status Screen Button

The following procedure uses the Copy and Paste functions to copy the MOTOR SPEED button from the MOTOR STATUS to the MOTOR SPEED screen.

1. From the Window menu choose Getting Started to activate the Application File window.

2. Double-click on MOTOR STATUS to open screen 1.
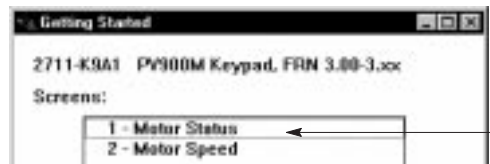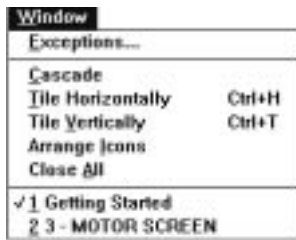
3. Select [MOTOR SPEED F8] on the Motor Status screen.

Creating the Motor Speed Screen

4. Click the Copy tool.

5. Double-click the control-menu box of screen 1 or choose Close from the Screen menu to close the screen.

Control-menu box ──→   `2 - MOTOR STATUS`

6. Activate screen 2 by clicking the title bar of the screen or choosing MOTOR SPEED from the Window menu.

7. Click the Paste tool.

8. Move the outline to the lower right corner of the screen and click the left mouse button.

To change the inner text of the copied screen button:

1. Click the Inner Text tool.

2. Replace MOTOR SPEED F8 with MOTOR STATUS F8

Text: **44**   `MOTOR/*R*/STATUS/*R*/F8`

Don't worry if this number is different. ────────┘

ENTER key pressed twice
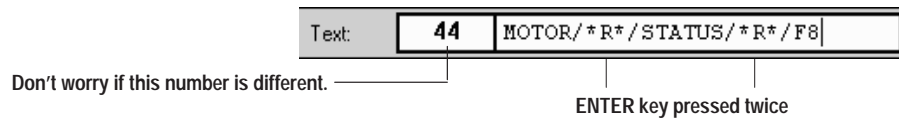
3. Click to exit inner text mode.

To change the properties of the copied screen button:

1. Double-click the object to open its dialog.

2. Set the properties as shown below.

Screen Selector Object

Properties | Options

Type:
Goto Specific Screen

Screen:
Select Motor Speed ──→ MOTOR STATUS

Input
Function Key:
Select F8 for PV900/PV1400 terminals ──→ F8
Select F5 for PV550/PV600 terminals
☐ Touch Cell

OK   Cancel
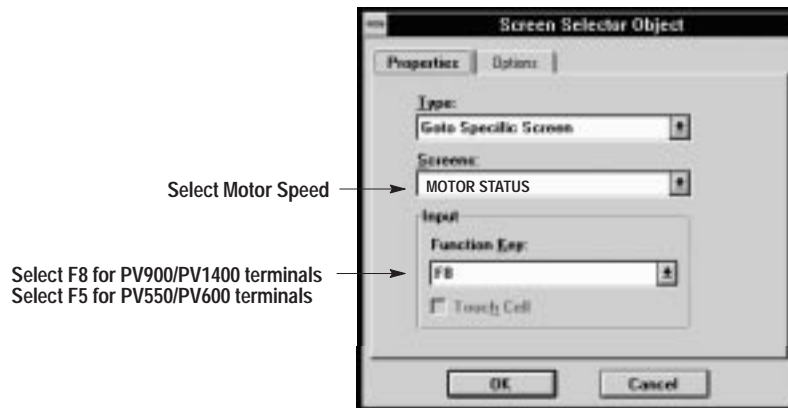
3. Click OK to close the dialog.

Creating the Speed Bar Graph and Scale
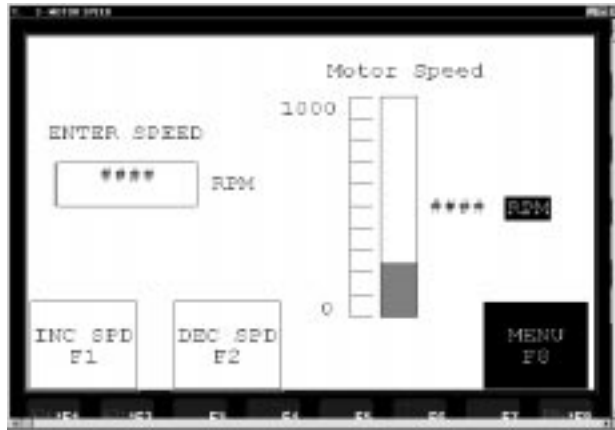
To create a bar graph:

Toolbox

1. Click the Bar Graph tool [▣] in the toolbox.

2. Position the pointer (+), hold down the left mouse button and drag the pointer to size the bar graph.
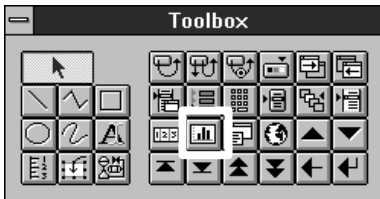
3. Click right mouse button or [▶] in toolbox to exit bar graph mode.

4. From the Format ▶Fill Pattern menu choose Cross Hatch.

   Or click [▦] on the format bar and choose Cross Hatch.

None

For Color

- Select Light Red from the top row of the color palette.
- Select White from the bottom row of the color palette.

Color Palette

Light Red is the Foreground Color

White is the Background Color

Creating the Motor Speed Screen

To set bar graph properties:

1. Double-click the bar graph object to open its dialog.

2. Set the properties as shown below.

Type 1000

Type Motor_Speed_Ind
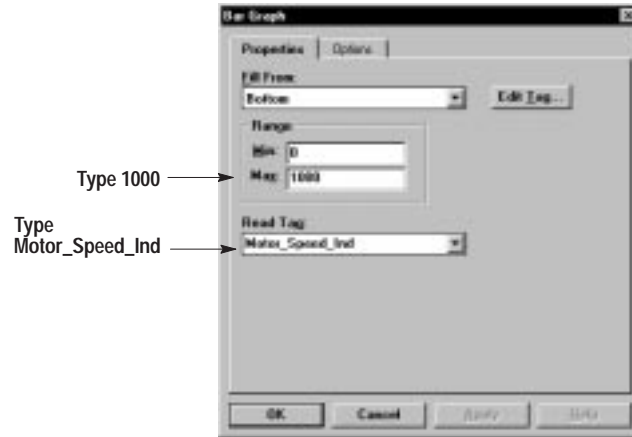
3. Click OK to close the dialog.

To create the bar graph scale:

1. Click the Scale tool in the toolbox.

2. Position the pointer (+) at the top, left of the bar graph, hold down the left mouse button and drag the pointer to size the scale.
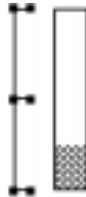
3. Click the right mouse button or [↖] to exit scale mode.

For Color   Select Light Red from the top row of the color palette.

To specify the number of tick marks:

1. Double-click the scale object to open its dialog.

2. Click in the Number box and type 11.

Type 11

3. Click OK to close the dialog.
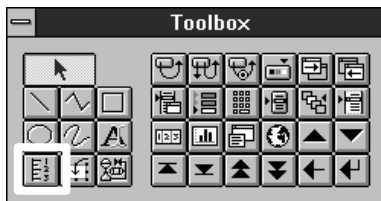
To create the tick-mark labels (1000, 0):
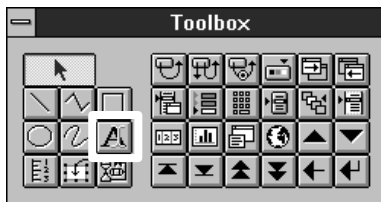
Toolbox

1. Click the Text tool in the toolbox.

2. Position pointer (+) to the left of the top tick-mark, click left mouse button and drag to size the text block.

3. Type 1000 in the Text box.

| Text: | **45** | 1000 |
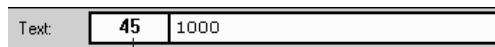
Don't worry if this number is different.

4. Click on the format bar and choose 16x24. Don't change the text size for PV550 applications.

5. Choose Right from the Format ▸ Align Text menu or click

For Color

- Select Light Red from the top row of the color palette.
- Select Black from the bottom row of the color palette.

Color Palette

Light Red is the Foreground Color

Black is the Background Color

6. Click to exit inner text mode.

7. Click the right mouse button or to exit text mode.

8. Resize the text object if necessary.

9. Click the Copy tool and then the Paste tool

Move the outline of the text block to the bottom of the scale.

10. Click to enter inner text mode.

11. Replace 1000 with 0 in the Text box and then click to exit inner text mode.

Creating the Motor Speed Screen

To create the Motor Speed heading above the bar graph:

1. Click [A] in the toolbox.

2. Position pointer (+) above bar graph and drag to size text block.

3. Type Motor Speed in the Text box.

4. Click [A:] on the format bar and choose 16x24. Don't change the text size for PV550 applications.

For Color
   - Select White from the top row of the color palette.
   - Select Black from the bottom row of the color palette.

White is the Foreground Color
Black is the Background Color

5. Click [画] to exit inner text mode.

6. Click the right mouse button or [▶] to exit text mode.

7. Resize the text object if necessary.

Creating the Speed Numeric Entry Object

Speed Numeric Entry Object →

To create the Speed numeric entry object:

1. Click the Cursor Point tool [目] in the toolbox.

2. Position the pointer (+), hold down the left mouse button and drag the pointer to size the object.

   The object is created with 6 numeric placeholders.
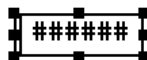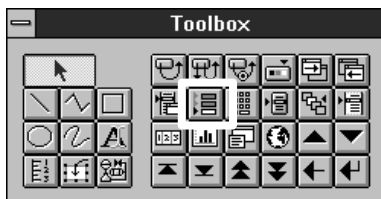
3. Click [画] to enter inner text mode.

4. Click [A] and choose 16x24. Don't change the text size for

PV550 applications.

For Color
- Select Light Cyan from top row of the color palette.
- Select Magenta from the bottom row of the color palette.

Light Cyan is the Foreground Color   Magenta is the Background Color

5. Exit inner text mode.

6. Click the right mouse button or [↖] to exit cursor point mode.

For Color
- Select Light Magenta from the top row of the color palette.
- Select Magenta from the bottom row of the color palette.
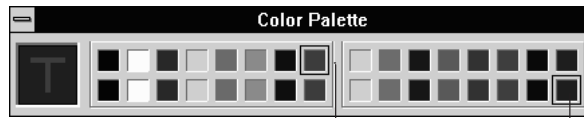
Light Magenta is the Foreground Color   Magenta is the Background Color

To set the properties of the Speed numeric entry object:

1. Double-click the numeric entry object to open its dialog.

2. Set the properties as shown below.

3. Click OK to close the dialog.

The object now has 4 numeric placeholders ####.

Creating the Motor Speed Screen
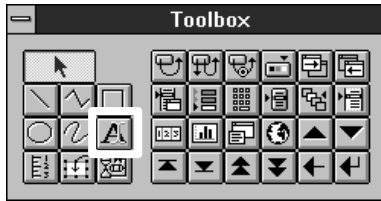
To create the heading ENTER SPEED:

```
ENTER SPEED
    ####    RPM
```
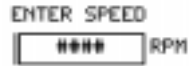
Toolbox

1. Click 𝐀 in the toolbox.

2. Position pointer (+) above the numeric entry object, hold down the left mouse button, drag the pointer to size the text block.

3. In the Text box, type ENTER SPEED.

Text:	49	ENTER SPEED

Don't worry if this number is different.

4. Click 𝐀ͬ and choose 16x24.

For Color
   - Select Light Magenta from the top row of the color palette.
   - Select Black from the top row of the color palette.

5. Click 🖳 to exit inner text mode.

6. Click the right mouse button or � to exit text object mode.

7. Resize the text block, if necessary, to fit all the text.

To create the RPM descriptive label:

```
ENTER SPEED
    ####    RPM
```
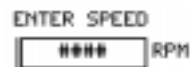
1. Click 𝐀 in the toolbox.

2. Position pointer (+) to the right of the numeric entry object, hold down the left mouse button, drag pointer to size the text block.

3. In the Text box, type RPM.
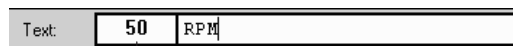
Text:	50	RPM

Don't worry if this number is different.

4. Click 𝐀ͬ and change the text size to 16x24. Don't change the text size for PV550 applications.

For Color
   - Select Light Cyan from the top row of the color palette.
   - Select Black from the bottom row of the color palette.

5. Click [icon] to exit inner text mode.

6. Click the right mouse button or [icon] to exit text object mode.

7. Resize the text block if necessary.

Creating the RPM Data Display

Numeric
Data
Display
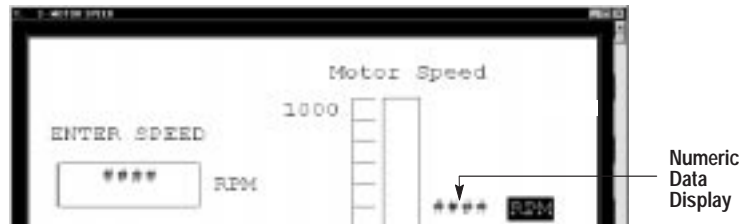
To create the RPM data display:

1. Click the Numeric Data Display tool [icon] in the toolbox.

2. Position the pointer (+), hold down the left mouse button and drag the pointer to size the object.

[icon] ######

The object is created with 6 numeric placeholders.

3. Click [icon] to enter inner text mode.

4. Click [icon] and change the text size to 16x24. Don't change the text size for PV550 applications.

For Color
- Select Light Red from the top row of the color palette.
- Select Black from the bottom row of the color palette.

5. Click [icon] to exit inner text mode.

6. Click the right mouse button or [icon] to exit data display mode.

Creating the
Motor Speed Screen

To set properties of the RPM data display:

1. Double-click the numeric data display object to open its dialog.

2. Set the properties as shown below.

Select Field Width of 4 ⟶

Type
Motor_Speed_Ind ⟶

3. Click OK to close dialog.

The object now has 4 numeric placeholders ####.

To create the numeric data display label RPM :

1. Select the RPM text block to the right of the numeric entry object.

2. Click the Copy tool 📋

3. Click the Paste tool 📋

4. Move outline to the right of the numeric data display and click the left mouse button.

RPM

5. On monochrome terminals, click the Toggle Fore/Background tool 🔲 on the format bar.

For Color   • Select Light Red from the top row of the color palette.

Closing the Toolbox and Color Palette

To close the toolbox and color palette:

Choose Toolbox and then Color Palette from the View menu.

Or double-click the control-menu box in the upper left of each box.

Closing the Motor Speed Screen
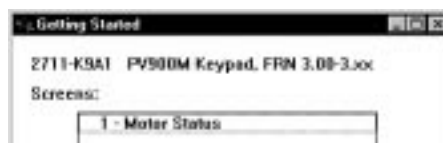
To close the MOTOR SPEED screen:

Choose Close from the Screen menu.

Or double-click the control-menu box on the screen.

Control_menu box ──────▶

The Application File window now shows 2 screens.
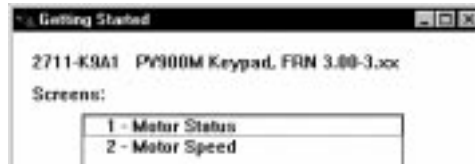
Linking the Motor Speed and Motor Status Screens

To link the Motor Speed screen to the Motor Status screen:

1. Double-click Motor Status to open the screen.

2. Double-click the Motor Speed screen button to open its dialog.

3. Set the properties as shown below.

Select Motor Speed ──────▶

Select F8 for PV900/PV1400 terminals ──────▶
Select F5 for PV600 terminals
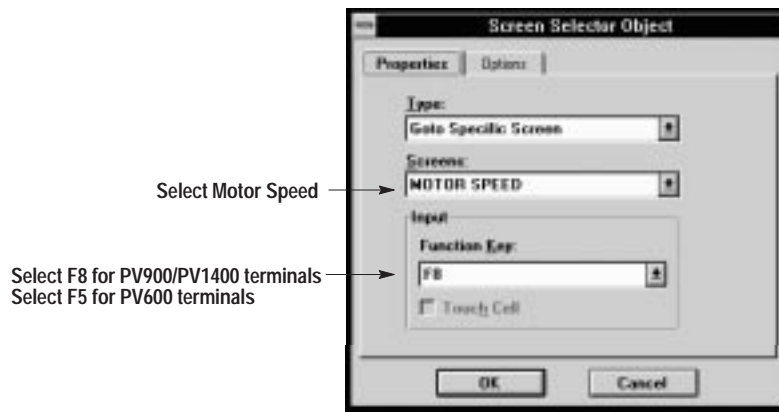
4. Click OK to close dialog.

5. Choose Close from Screen menu to close the Motor Status screen.

Creating Alarms

This section shows how to create alarms for applications created with V2.0 or later PanelBuilder Software.

Procedures show how to create an Alarm Banner, which pops up over an application screen when an alarm is triggered. The banner includes:

• Message Display to show an alarm message

• Ack button allowing operator to acknowledge an alarm

• Clear button allowing operator to clear the banner

The Alarm Banner is a global display that is used by all screens in the application.

To create the Alarm Banner:

1. Choose Create Alarm Banner from the Screen menu.
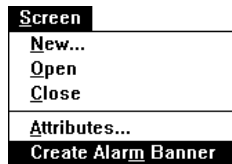
Alarm Message Display
Message does not appear until
you configure alarm messages.
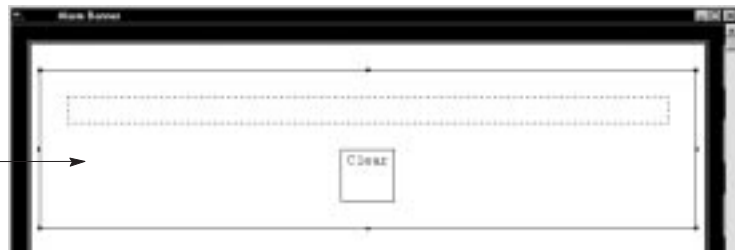
2. Configure the Clear alarm button.

• Click outside of the Alarm Banner, then select the Clear button and move it to the left side of banner as shown below.

• Double-click the Clear button to open its dialog. Select the F4 function key and then click OK to close the dialog.

• Click 🖼 to enter inner text mode, append F4 (press Enter after Clear, then type F4) to the text, then exit inner text mode.

Objects
Push Buttons ▶
Screen Selectors ▶
Numeric Entry ▶
Control List Selectors ▶
Indicators ▶
Numeric Data Display
Bar Graph
Scale
Message Display
Graphics ▶
List Keys ▶
Alarm History
Alarm Buttons
Global Object...

Acknowledge
Clear
Print
Clear History
Print History
Ack All
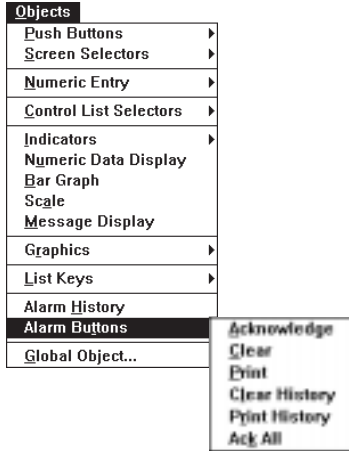
Message does not appear in display until you configure alarm messages.

3. Create the Ack alarm button.

- Choose Acknowledge from the Objects ▶Alarm Buttons submenu.
- Position pointer (+) within the right side of the banner. Click the left mouse button to place the Ack button as shown below.
- Click the right mouse button to exit Ack button mode.
- Double-click the Ack button to open its dialog. Select the F7 function key and then click OK to close the dialog.
- Enter inner text mode, append F7 (press Enter after Ack , then type F7) to the text, then exit inner text mode.

To define the alarm trigger:

1. Double-click the Alarm Message Display in the Alarm Banner.

Or choose Alarm Setup from the Application menu.

The Alarm Setup dialog opens.

Application
Text Editor...
Tag Editor...
Project Management...
Description...
Validate Changes...
Validate All...
Download...
Upload...
Terminal Setup...
Alarm Setup...
Print Only Object Setup...

2. Click the Alarm Triggers tab.
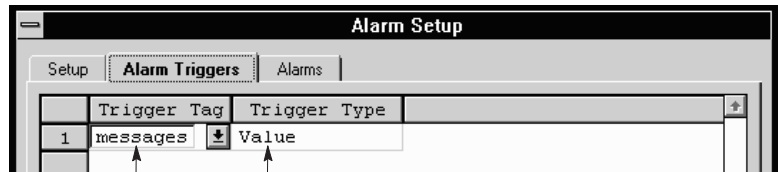
Type Messages — | — Select Value

3. Click in the Trigger Tag field and type Messages.

4. Click in the Trigger Type field and select Value from the list.

To define alarm messages:

1. Click the Alarms tab.

A spreadsheet opens. Each row represents an alarm message.

Use the horizontal scroll bar to view fields not shown.

1. Edit the following fields for alarm message 1 (row 1):
- In the Text field, type MOTOR SPEED TOO HIGH.
- In the Value/Bit field, type 950.
- In the Trigger field, select Messages.
- In the ACK field, select the check box.

2. Click the right mouse button and choose Append Alarm from the popup menu. A new row is added with defaults from row 1.

3. Edit the following fields for alarm message 2 (row 2):
- In the Text field, type MOTOR SPEED TOO LOW.
- In the Value/Bit field, type 50.
- Verify that the ACK field check box is selected.

4. Click on row 1 to display this message in the display.

5. Click OK to exit the Alarm Setup dialog.

To close the Alarm Banner:

Choose Close from the Screen menu.

Or double-click the control-menu box on the screen.

The Application File window now shows the Alarm Banner and 2 screens.

Saving the Application

File
New...
Open...
Close
Save   Shift+F12
Save As...
Import/Export Graphics...
Reports...
Workstation Setup...
Exit   Alt+F4
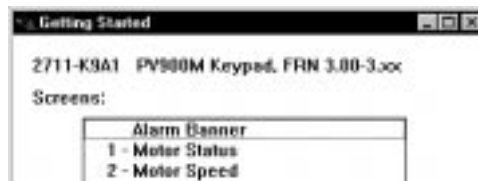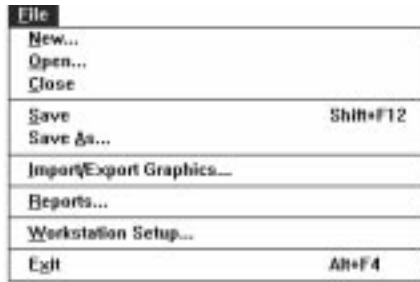
To save the application file:

1. Choose Save from the File menu.

Or click 🔳 on the tool bar.

The Save As dialog box opens. The File Name box shows the first 8 characters of the application name with the .pba file type (default).

Save As   ? ✕

File name: Folders:
getting_.pba   c:\ab\pbwin\gs

3stchie.pba   📁 c:\
3stv2485.pba   📁 ab
3stv2ne.pba   📁 pbwin
getting_.pba   📁 gs
gskeypad.pba
gsiokey.pba
gsiotch.pba
gstouch.pba

Save file as type: Drives:
PanelBuilder Files   c: acintpre_c

OK
Cancel
Network...

▶   If the application was previously saved, the Save As dialog would not open. The application would be automatically saved under the name previously entered in the Save As dialog.

2. Type gtstart.pba in the File Name box.

3. Click the OK button.

The file GTSTART.PBA is saved to the C:\AB\PBWIN folder. PanelBuilder adds the .PBA extension.

Summary

You just finished creating the screens for the getting started application.

The next chapter will show how to set the power-up and runtime communication settings for the PanelView terminal.

PanelView Terminal Setup

Chapter Objectives

This chapter shows how to define the power-up options and runtime communication parameters for the PanelView terminal.

When defining communication parameters, refer to either the DH-485, Remote I/O, or DH+ section depending on the terminal type you are using.

Defining Remote I/O Communication Settings

This section shows how to define runtime communication parameters for a Remote I/O version of the PanelView terminal.

Skip to page 5–4 if defining runtime communication parameters for a DH-485 or RS-232 terminal. Skip to page 5–5 if defining runtime communication parameters for a DH+ terminal.

To configure Remote I/O communications:

1. Choose Terminal Setup from the Application menu.

2. Select the Setup tab.

The dialog shows the name and type of PanelView 900 terminal defined for the application. The dialog would look similar for a PanelView 550 terminal.
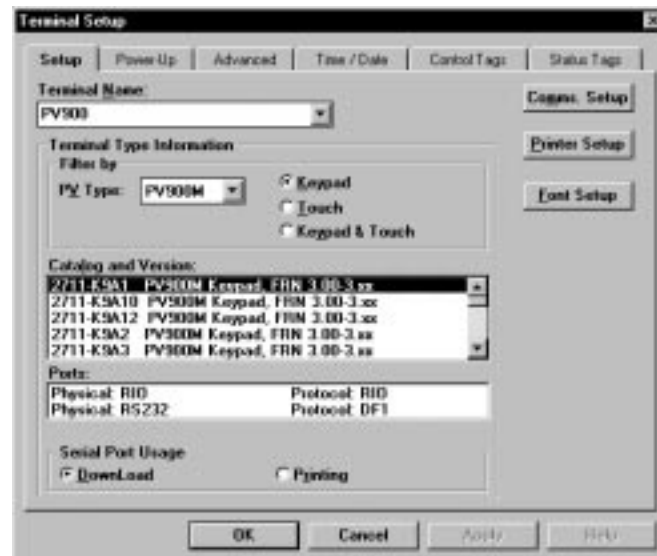
▶ The terminal name was defined when the application was created.

3. Click `Comms. Setup` from the Setup tab.

The Remote I/O Communication Setup dialog opens.

4. Set parameters to match those shown in the dialog below.

Remote I/O Communications dialog
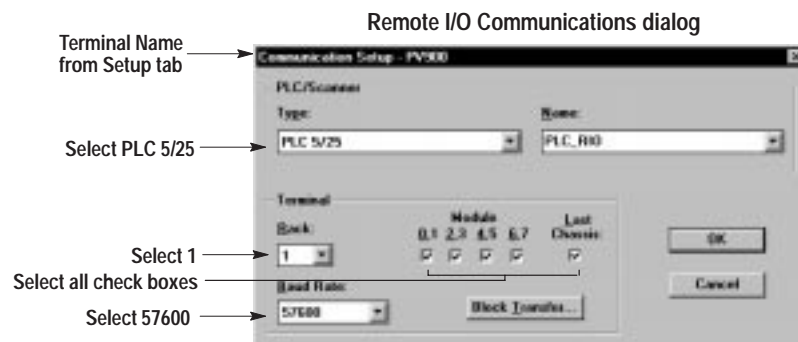
To set up the block transfers for Remote I/O Communications:

1. Click the Block Transfer button.

The Block Transfer dialog opens.

Block Transfer 1 assignment →
Block Transfer 2 assignment →

Check Pass Through box → ← Select 0

2. Enter data for the 2 block transfers shown above.

For Block Transfer 1:

– Check the Enabled box
– Type N7:0 in the Address field
– Select W (for Write) from the Mode box.
– Select 10 from the Length box.

For Block Transfer 2:

– Check the Enabled box
– Type N7:10 in the Address field
– Select R (for Read) from the Mode box.
– Select 10 from the Length box.

3. Check the Pass Through box.

4. Select 0 from the Block Transfer Timeout box.

5. Click OK to return to the Communication Setup dialog.

6. Click OK to return to the Terminal Setup dialog.

Defining DH-485 Communication Settings

This section shows how to define DH-485 runtime communication parameters for the DH-485 (or RS-232) version of the PanelView terminal.

To configure DH-485 communications:

1. Choose Terminal Setup from the Application menu.

2. Select the Setup tab.

The dialog shows the name and type of PanelView 900 terminal defined for the application. The dialog would look similar for any PanelView terminal.
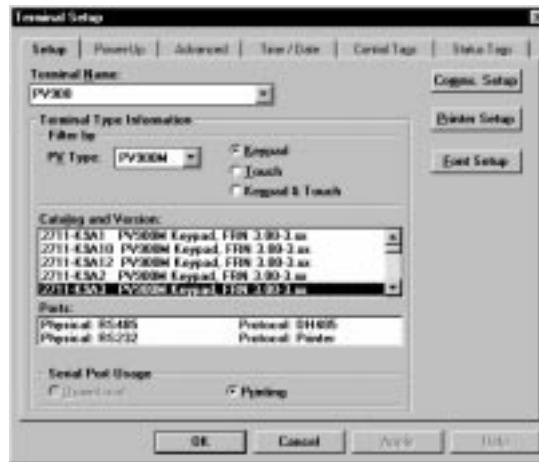
▶   The terminal name was defined when the application was created.

3. Click `Comms. Setup` from the Setup tab.

The DH-485 Communication Setup dialog opens for the terminal.

4. Set parameters to match those shown in the dialog below.

DH-485 Communications Dialog
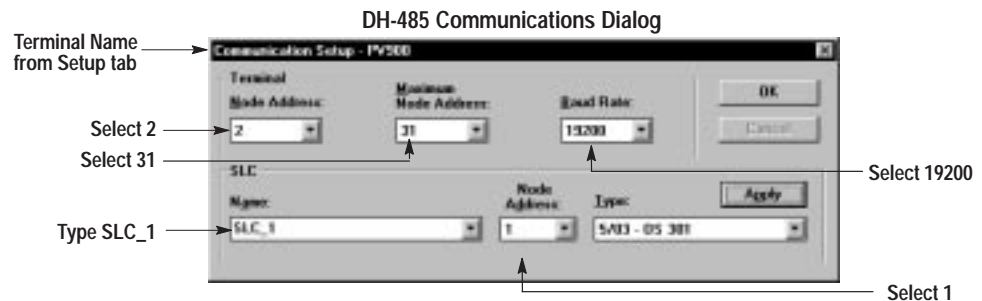
5. Click the Apply button.

6. Click OK to return to the Terminal Setup dialog.

7. Click OK to close the Terminal Setup dialog.

DH+ Communication Settings

This section shows how to define runtime communication parameters for DH+ version of the PanelView terminal.

To configure DH+ communications:

1. Choose Terminal Setup from the Application menu.

2. Select the Setup tab.

The dialog shows the name and type of PanelView 900 terminal defined for the application. The dialog would look similar for any PanelView terminal.
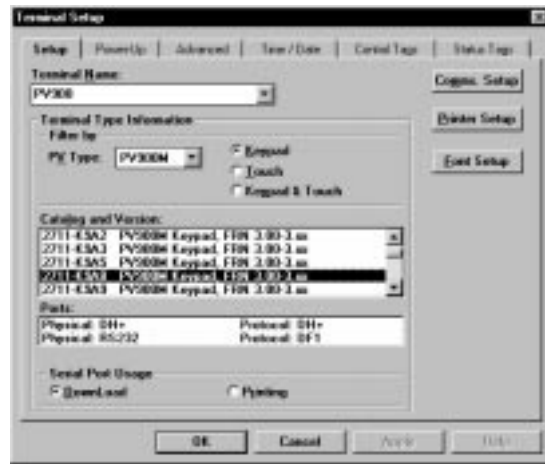
The terminal name was defined when the application was created.

3. Click `Comms. Setup` from the Setup tab.

The DH+ Communication Setup dialog opens for the terminal.

4. Set parameters to match those shown in the dialog below.

DH+ Communications Dialog
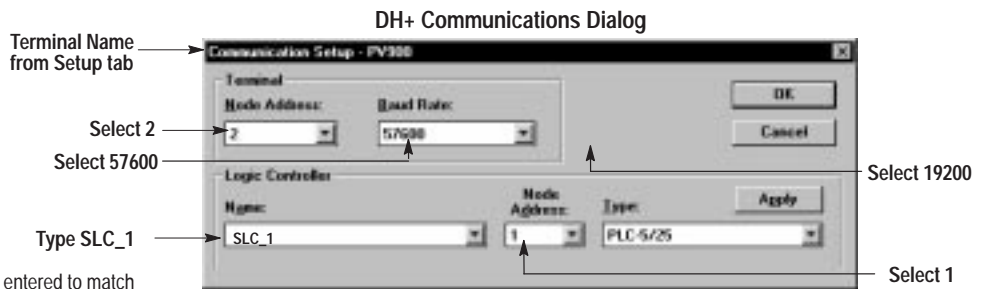
Note: SLC_1 is entered to match the node name in the GS project (tag database).

5. Click the Apply button.

6. Click OK to return to the Terminal Setup dialog.

7. Click OK to close the Terminal Setup dialog.

Setting Terminal Power-up Options

To set power-up options for the PanelView Terminal:

1. Choose Terminal Setup from the Application menu.

2. From the Terminal Setup dialog, select the Power-Up tab.

Select Motor Status ——→

[Terminal Setup dialog]

Tabs: Setup, **Power-Up**, Advanced, Time / Date, Control Tags, Status Tags

Startup Screen: **MOTOR STATUS**

Power-Up Options

Control Object Presets

☑ Write to Controller on Startup

⦿ Use Terminal Presets   ○ Use Last Terminal States

☑ Display last user screen on restart

Memory Card

⦿ Always Load from Card

○ Never Load from Card

○ Load from Card if Invalid Application Detected

☑ Use downloaded configuration settings

[OK] [Cancel] [Apply] [Help]

3. Verify that Motor Status is selected from the Startup Screen box.

4. Click the OK button.

Saving the Application

To save changes to the application:

Click 🖫 on the tool bar.

Summary

You just defined power-up settings and runtime communications for the PanelView terminal.

The next chapter will show you how to enter the application tags.

Entering the Application Tags

Chapter Objectives

This chapter contains the following sections.

Opening the Tag Editor

This section shows how to open the Tag Editor to enter, view, or edit tags for an application.

To open the tag editor:

From the Application menu, choose Tag Editor.

The Tag Editor opens and shows the table view of the editor.

Project Name

Maximize button

Status Column

Shows a pencil if you are editing a row or an X if the row has an error.
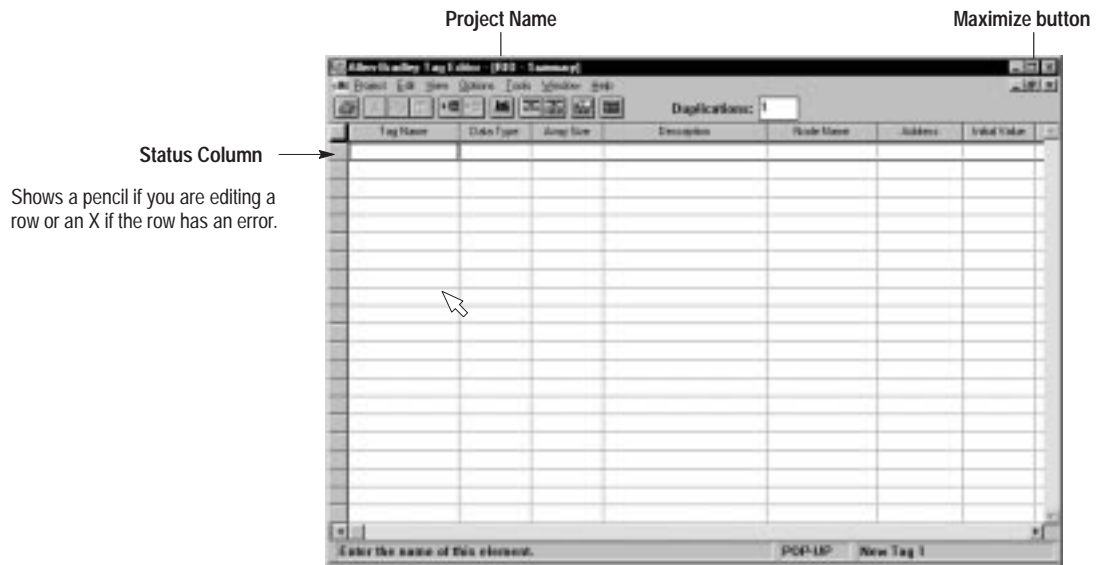
▶ Click the Maximize button to enlarge the window.

Overview of Tags

The following tables list tag data for:

- DH-485/DH+ applications communicating with an SLC or PLC controller. The tag data is the same for these applications.

  For DH+ applications communicating with a PLC, it is okay to leave SLC_1 in the Node Name field.

- Remote I/O application communicating with a PLC controller

Refer to the appropriate table when entering tags in the next section.

Tags for DH-485 or DH+ Getting Started Application (Project GS)

Tag Name	Data Type	Description	Node Name① (Controller)	Tag Address	Initial Value	Update Frequency
Messages	Unsigned Integer	Displays alarm messages.	SLC_1	N7:3	0	1
Motor_AutoManual	Unsigned Integer	Motor auto/manual indication.	SLC_1	N7:0	0	1
Motor_Speed	Unsigned Integer	Controls motor speed.	SLC_1	N7:1	0	1
Motor_Speed_Dec	Bit	Decrements motor speed.	SLC_1	B3:0/3	0	1
Motor_Speed_Inc	Bit	Increments motor speed.	SLC_1	B3:0/2	0	1
Motor_Speed_Ind	Unsigned Integer	Indicates motor speed.	SLC_1	N7:2	0	1
Motor_Start	Bit	Starts motor.	SLC_1	B3:0/0	0	1
Motor_Start_Ind	Bit	Motor start indication.	SLC_1	B3:0/4	0	1
Motor_Stop	Bit	Stops motor.	SLC_1	B3:0/1	0	1
Motor_Stop_Ind	Bit	Motor stop indication.	SLC_1	B3:0/5	0	1

Tags for Remote I/O Getting Started Application (Project GSRIO)

Tag Name	Data Type	Description	Node Name (Controller)	Tag Address	Initial Value	Update Frequency
Messages	Unsigned Integer	Displays alarm messages.	PLC_RIO	N7:4	0	1
Motor_AutoManual	Unsigned Integer	Motor auto/manual indication.	PLC_RIO	N7:10	0	1
Motor_AutoMan_Ind	Unsigned Integer	Motor auto/manual status indication.	PLC_RIO	N7:3	0	1
Motor_Spd_Handshk	Bit	Motor speed handshake.	PLC_RIO	N7:2/2	0	1
Motor_Spd_Notify	Bit	Motor speed notification.	PLC_RIO	N7:11/4	0	1
Motor_Speed	Unsigned Integer	Controls motor speed.	PLC_RIO	N7:13	0	1
Motor_Speed_Dec	Bit	Decrements motor speed.	PLC_RIO	N7:11/0	0	1
Motor_Speed_Inc	Bit	Increments motor speed.	PLC_RIO	N7:11/1	0	1
Motor_Speed_Ind	Unsigned Integer	Indicates motor speed.	PLC_RIO	N7:1	0	1
Motor_Start	Bit	Starts motor.	PLC_RIO	I:010/10	0	1
Motor_Start_Ind	Bit	Motor start indication.	PLC_RIO	O:010/10	0	1
Motor_Stop	Bit	Stops motor.	PLC_RIO	I:010/11	0	1
Motor_Stop_Ind	Bit	Motor stop indication.	PLC_RIO	O:010/11	0	1

Entering the Tags

Follow the same basic procedure to enter the application tags.

To enter the Messages application tag:

1. Click in the Tag Name field and type Messages.

This icon indicates the row you are editing.

	Tag Name	Data Type	Array Size	Description	Node Name	Address	▲
✎	Messages						

2. Move to the Data Type field

Move mouse pointer to Data Type field and click the left mouse button or press the TAB key.

3. Click the arrow on the Data Type box to list the options and click on Unsigned Integer.

	Tag Name	Data Type	Array Size	Description	Node Name	Address	▲
✎	Messages	⬥					
		▲					
		Bit					
		4BCD					
		Unsigned Inte ▼					

4. Move to Description field and type "Displays alarm messages."

	Tag Name	Data Type	Array Size	Description	Node Name	▲
	Messages	Unsigned Integer		Displays alarm messages.		

5. Move to Node Name field and type "PLC_RIO" for the Remote I/O application, "SLC_1" for the DH-485 or DH+ application.

	ray Size	Description	Node Name	Address	Initial Value	Update Frequency	▲
✎		Displays alarm messages.	PLC_RIO				

6. Move to the Address field and type N7:4 for the Remote I/O application or N7:3 for the DH-485 or DH+ application.

	ray Size	Description	Node Name	Address	Initial Value	Update Frequency	▲
✎		Displays alarm messages.	PLC_RIO	N7:4			

7. Move to the Initial Value field and type 0.

	ray Size	Description	Node Name	Address	Initial Value	Update Frequency	▲
✎		Displays alarm messages.	PLC_RIO	N7:4	0		

8. Click the arrow on the Update Frequency box to list the options and click on 1.

	Type	Array Size	Description	Node Name	Address	Initial Value	Update Frequency	↑
✎	d Integer		Displays alarm messages.	PLC_RIO	N7:4	0		↓
								↑
							1	
							2	
							3	↓

9. Save the tag definition by:

Pressing ENTER.

Or moving the cursor to the Tag Name field of the next row.

Or double-clicking in the Status Column box for that tag.

Repeat steps 1 – 10 to create the rest of the tags. Enter the data shown in the appropriate table on page 6–2.

Here is what the Tag Editor looks like when you are done entering the tags.

GSRIO Project – Remote I/O Tags for PLC

Tag Name	Data Type	Array Size	Description	Node Name	Address	Initial Value	
messages	Unsigned Integ			PLC_RIO	N7:4	0	1
motor_automanual	Unsigned Integ			PLC_RIO	N7:10	0	1
motor_automan_ind	Unsigned Integ			PLC_RIO	N7:3	0	1
motor_spd_handshk	Bit			PLC_RIO	N7:2/2	0	1
motor_spd_notify	Bit			PLC_RIO	N7:11/4	0	1
motor_speed	Unsigned Integ			PLC_RIO	N7:13	0	1
motor_speed_dec	Bit			PLC_RIO	N7:11/0	0	1
motor_speed_inc	Bit			PLC_RIO	N7:11/1	0	1
motor_speed_ind	Unsigned Integ			PLC_RIO	N7:1	0	1
motor_start	Bit			PLC_RIO	I:010/13	0	1
motor_start_ind	Bit			PLC_RIO	O:010/18	0	1
motor_stop	Bit			PLC_RIO	I:010/11	0	1
motor_stop_ind	Bit			PLC_RIO	O:010/11	0	1

Enter the name of this element.   POP-UP   Tag 1 of 13

GS Project – DH-485/DH+ Tags for SLC or PLC

Tag Name	Data Type	Array Size	Description	Node Name	Address	Initial Value	▲
messages	Unsigned Integer		Displays alarm messages	SLC_1	N7:3	0	1
motor_automanual	Unsigned Integer		Motor auto/manual indication.	SLC_1	N7:8	0	1
motor_speed	Unsigned Integer		Controls motor speed.	SLC_1	N7:1	0	1
motor_speed_dec	Bit		Decrements motor speed.	SLC_1	B3:0/3	0	1
motor_speed_inc	Bit		Increments motor speed.	SLC_1	B3:0/2	0	1
motor_speed_ind	Unsigned Integer		Indicates motor speed.	SLC_1	N7:2	0	1
motor_start	Bit		Starts motor.	SLC_1	B3:0/0	0	1
motor_start_ind	Bit		Motor start indication.	SLC_1	B3:0/4	0	1
motor_stop	Bit		Stops motor.	SLC_1	B3:0/1	0	1
motor_stop_ind	Bit		Motor stop indication.	SLC_1	B3:0/5	0	1

Exiting the Tag Editor
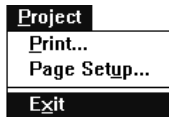
To exit the Tag Editor:

From the Project menu choose Exit.

You return to the PanelBuilder workspace.

Using the Form View

The second way to enter tags is to use the form view of the Tag Editor. The form view is a dialog which allows you to enter one tag at a time. You can access the form view from an object's dialog when creating the application or from the Tag Editor.

For details on using the form view, see the PanelBuilder User Manual (Publication 2711-6.0).
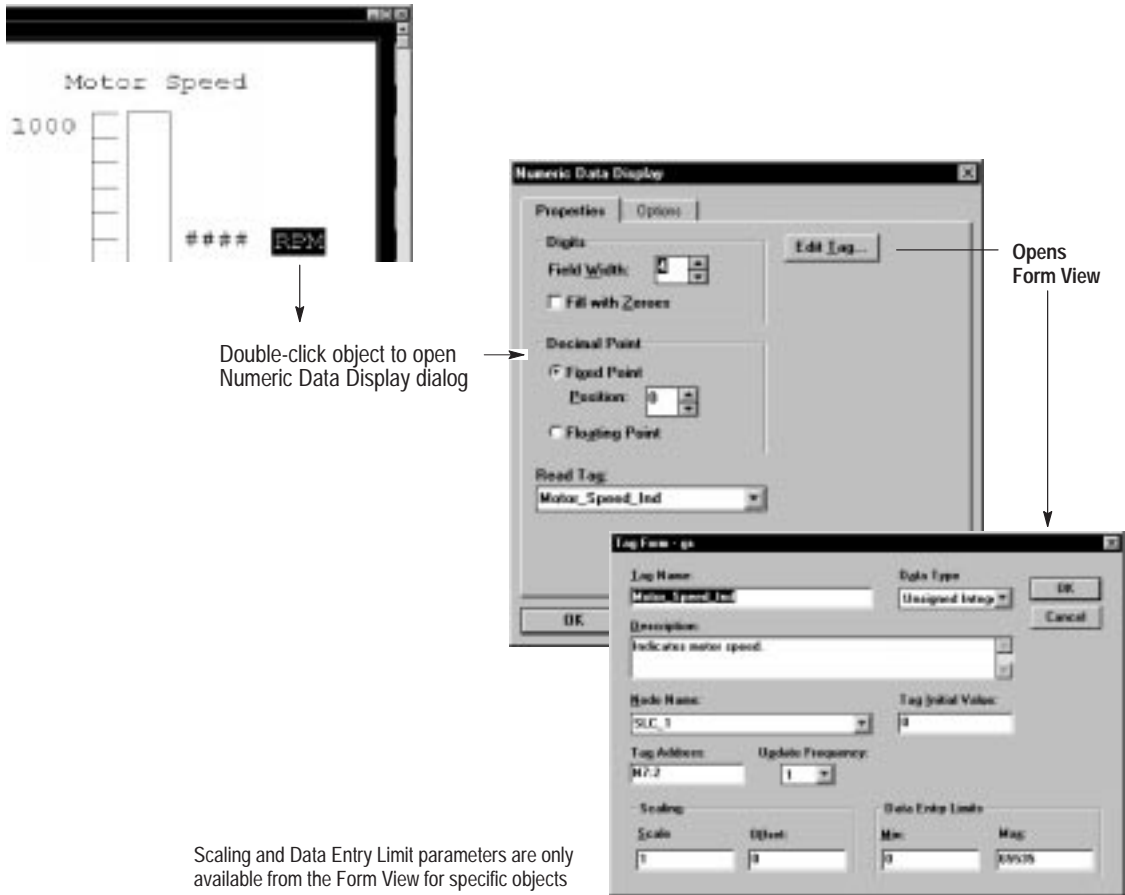
Double-click object to open
Numeric Data Display dialog

Opens
Form View

Scaling and Data Entry Limit parameters are only
available from the Form View for specific objects

Validating and Downloading the Application

Chapter Objectives

This chapter contains the following sections.

Sections	Page
Validating the Application	7–1
Downloading the Application	7–2
Closing the Application	7–4

Validating the Application

Application
Text Editor...
Tag Editor...
Project Management...

Description...

Validate Changes...
Validate All...
Download...
Upload...

Terminal Setup...
Alarm Setup...
Print Only Object Setup...

This section shows how to validate the application for errors.

To validate the sample application:

1. From the Application menu choose Validate All.

The following dialog opens when the application passes validation.
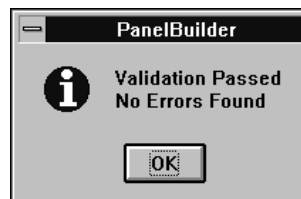
2. Click OK.

If the application does not pass validation, the Exceptions dialog opens listing all errors found. You must correct errors and then re-validate the application. Warnings do not have to be corrected.

Click to close dialog
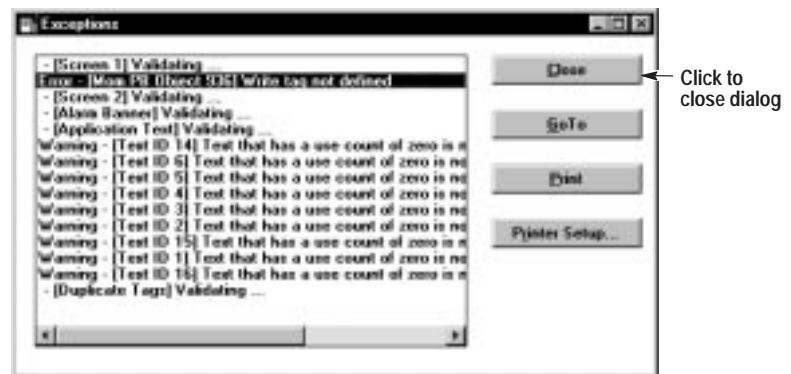
For details on how to correct the errors and the meaning of the errors, see the PanelBuilder Software user manual (Publication 2711-6.0).

Downloading the Application

This section shows how to download the sample application from your computer to a PanelView terminal using a serial link.

- check cable connections (see Chapter 2).

- use the Internal DF1 driver to download applications to Remote I/O, DH+ and RS-232 terminals (with an RS-232/DF1 port).

- use the Internal DH485 driver to download applications to DH-485 terminals. The DH485 driver requires Windows 95.

  To use the internal drivers, INTERCHANGE drivers must be disabled. Exit windows and type ABICSTOP at the DOS prompt.

To download an application using the Internal DF1 Driver:

① **Open the application you want to download.**

② **Choose Download from the Application menu.**

Application menu items:
- Text Editor...
- Tag Editor...
- Project Management...
- Description...
- Validate Changes...
- Validate All...
- Download...

③ **Select Download parameters.**

Select Operator Terminal →

Download Application dialog:
Destination
- Operator Terminal
- Operator Terminal via Pass-Through
- DOS File
- DOS Memory Card

OK — Click OK to start download.

Cancel

Setup — Setup button is active if more than one COM port is available.

Select Internal DF1 Driver →

Communication Drivers
Internal DF1
Active drivers: DF1 (COM2)

Shows COM port on which DF1 driver is active

Enter name of .PVA file in which to save the translated .PBA file or click Browse to search for a file. →

File Name:
GTSTART.PVA   Browse...

☐ Download only if different from current application.

Check this box to download the application only if it is different from the application loaded in the terminal.

The internal DF1 driver is assigned to COM2.

DF1 Setup
COM Ports
○ 1 ● 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7 ○ 8
OK   Cancel

④ **Application is validated and translated to a .PVA file.**

If errors or warnings are detected, the Exceptions dialog opens.
You must correct errors before download can proceed.
Warnings should be corrected, but the download will proceed.

⑤ **PanelBuilder software and terminal display status of download.**

Transfer gtstart.pva To Operator Terminal
WINPT1 — Version
PanelView Application File Transfer Utility
Copyright © 1996 Allen-Bradley Company, Inc.
All rights reserved.
Status:
Attempting to establish communications on local network.
Transfer Started....
Progress:
512 of 8232 bytes transferred (5%)

```
FILE TRANSFER STATUS:
0%              50%             100%

    ████████

        25    Percent Complete

In progress...
```
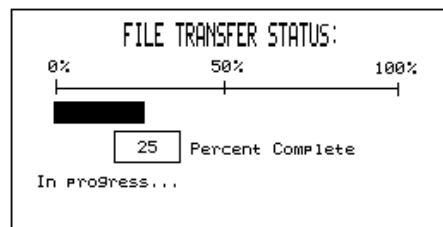
⑥ **Terminal resets, verifies and displays the startup screen of the application.**

To download an application using the Internal DH485 Driver:

① **Open the application you want to download.**

Application
Text Editor...
Tag Editor...
Project Management...
Description...
Validate Changes...
Validate All...
Download...

② **Choose Download from the Application menu.**

③ **Select the Download parameters.**

Download Application

Select Operator Terminal → **Destination**
Operator Terminal
DOS File
DOS Memory Card

OK

Cancel

Setup...

Click OK to start download.

Select Internal DH485 Driver → **Communication Drivers**
Internal DH485
Active drivers: DH485 (COM1)

Enter name of .PVA file in which to save the translated .PBA file or click Browse to search for a file.

File Name:
gtstart.pva   Browse...

☐ Download only if different from current application.

Check this box to download the application only if it is different from the application loaded in the terminal.

For DH-485 or RS-232 (DH-485) terminals, click Setup to verify network parameters.

DH485 Direct Setup

④ **Application is validated and translated to a .PVA file.**
If errors or warnings are detected, the Exceptions dialog opens. You must correct errors before download can proceed. Warnings should be corrected, but the download will proceed.

Node address of terminal on network → **Terminal Node Address:**

OK

Cancel

COM port using Internal DH485 driver → **COM Ports**
◉1 ○2 ○3 ○4 ○5 ○6 ○7 ○8

Workstation

Node address of computer on network → **Node Address:** 31

Max. Node: 31 ← Address of highest node on network

Baud Rate: 19200   **Network Name:** PICDH485

Baud rate of DH-485 network

Name of DH-485 network

⑤ **PanelBuilder software and terminal display status of download.**

Translate   gtstart.pva   to Operator Terminal

WINPFT
PanelView Application File Transfer Utility
Copyright © 1994 Allen Bradley Company, Inc.
All rights reserved.

Setup

Cancel

Status:
Attempting to establish communications on local network.
Transfer Started...

Progress:
102 of 8232 bytes transferred (1%)

FILE TRANSFER STATUS:

0%   50%   100%

25 Percent Complete

In progress...

⑥ **Terminal resets, verifies and displays the startup screen of the application.**

Closing the Application

You can now close the application (GTSTART.PBA).

To close an application:

From the File menu choose Close.

Or double-click the control-menu box on the application file window.

To exit PanelBuilder:

From the File menu choose Exit.

Running the Application

Chapter Objectives

This chapter shows how to run the application in the PanelView 900 terminal. It contains these sections.

Sections	Page
Running the Motor in Auto Mode	8–1
Running the Motor in Manual Mode	8–3

Running the Motor in Auto Mode

This section shows how to monitor the motor in auto mode. In auto mode, the motor is controlled by the SLC or PLC and continually changes speed. All keys that are pressed in the procedure that follows are located on the PanelView terminal.

After the application is downloaded, the PanelView terminal displays the Motor Status screen.

The Motor Status indicators show that the motor is started and in Auto mode.
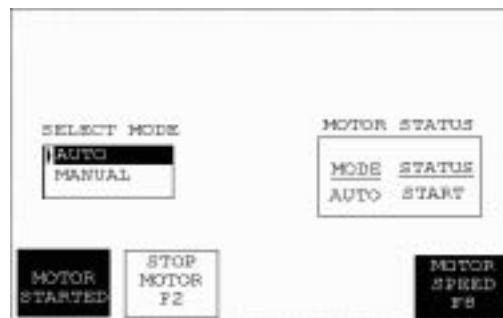
To monitor the status of the motor in auto mode:

1. Press the ⬛F2⬛ key to stop the motor.

Or if the terminal has a touch screen, press ⬛STOP MOTOR⬛

Notice how the Start and Stop motor push buttons change appearance to show the change in state.

The Status indicator in the Motor Status box also shows the current status of the motor.

2. Press the ⬜F1⬜ key to restart the motor.

Or if the terminal has a touch screen, press ▮START MOTOR▮

3. Press the ⬜F8⬜ key to display the Motor Speed screen.

Or if the terminal has a touch screen, press ▮MOTOR SPEED▮

In Auto mode, the motor speed is constantly changing and displayed by the bar graph and numeric data display.
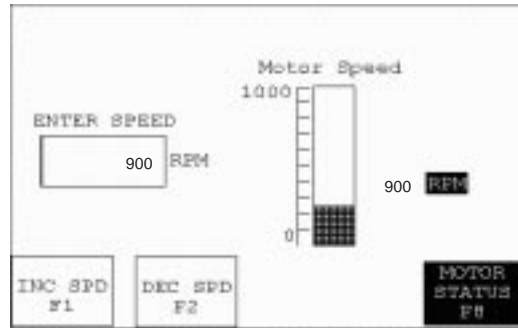
You cannot enter a new speed or increase/decrease the motor speed while in auto mode.

4. Press the ⬜F8⬜ key to return to the Motor Status screen.

Or if the terminal has a touch screen, press ▮MOTOR STATUS▮

▶ Alarm messages are not triggered while in auto mode.

**Running the Motor
in Manual Mode**

This section shows how to control and monitor the motor in manual mode. All keys that are pressed in the procedure that follows are located on the PanelView terminal.

To control and monitor the status of the motor in manual mode:
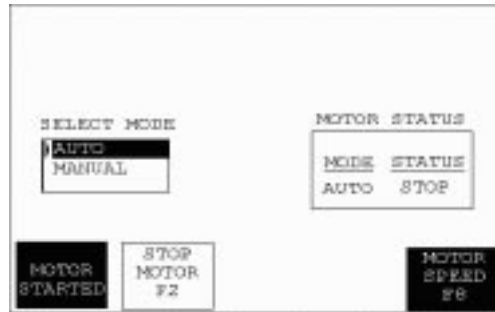
1. Press ▼ and then ← to select Manual from the Select Mode control list.

   Or if the terminal has a touch screen, press the equivalent list keys to right of the control list.

   The Mode indicator shows that the motor is in Manual mode.

2. Press the F8 key to return to the Motor Speed screen.

   Or if the terminal has a touch screen, press [MOTOR SPEED]

   The screen shows the current speed of the motor.
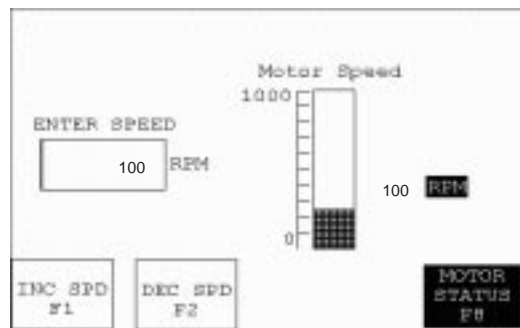
   In manual mode, you can enter a new motor speed, increase or decrease the motor speed. The bar graph and numeric data display are automatically updated to reflect the change in speed.

3. Press ← to open the scratchpad.

   Or if the terminal has a touch screen, press the Enter Speed object to open the touch screen scratchpad.

4. Enter a value of 500 in the scratchpad and press ⌷←⌷

Objects are automatically updated to reflect the new speed.
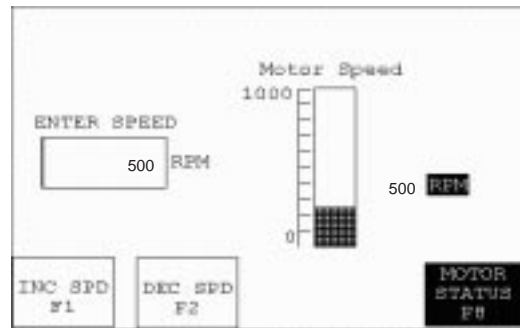
5. Press ⌷F1⌷ key to increase the motor speed.

Or if the terminal has a touch screen, press |INC SPD|

Objects are updated to reflect the new speed.

6. Press ⌷F1⌷ key twice to increase the speed again.

Or hold down ⌷F1⌋ until the speed increases by 20 RPM.

7. Hold down the ⌷F2⌋ key until the speed decreases 30 RPM.

Or if the terminal has a touch screen, press |DEC SPD|

Objects are automatically updated to reflect the new speed.

▶ The following alarm messages are triggered in manual mode.

• MOTOR SPEED TOO HIGH when motor speed is greater than 950 RPM.

• MOTOR SPEED TOO LOW when motor speed is less than 50 RPM

SLC Ladder Logic Program for
DH-485/DH+ Application

```
PanelView Getting Started Application for SLC DH485/DH+
Program Listing              Processor File: GETSTRTD.ACH


Rung 2:0
Timer for incrementing and decrementing motor speed in auto mode.
  T4:0                                          +TON---------------+
--]/[------------------------------------------+TIMER ON DELAY   +-(EN)-
    DN                                          |Timer         T4:0+-(DN)
                                                |Time Base     0.01|
                                                |Preset         200|
                                                |Accum            0|
                                                +-----------------+


Rung 2:1
The motor is started when the Start Push Button is pressed on the PanelView.
Start status is indicated by B3:0/4.
    B3                                                              B3
-+--] [--------+-----------------------------------------------------( )--
 |     0        |                                                      4
 |  B3     B3   |
 +--] [---]/[--+
      4     5


Rung 2:2
The motor is stopped when the Stop Push Button is pressed on the PanelView.
Stop status is indicated by B3:0/5.
    B3                                                              B3
-+--] [--------+-----------------------------------------------------( )--
 |     1        |                                                      5
 |  B3     B3   |
 +--] [---]/[--+
      5     4


Rung 2:3
The latch bit (B3:0/6) is set when counter C5:0 is done incrementing.  This
causes the  motor speed to begin decrementing if auto mode is selected.
  C5:0                                                              B3
--] [---------------------------------------------------------------(L)--
    DN                                                               6


Rung 2:4
The latch bit (B3:0/6) is unlatched when counter C5:0 is done decrementing.
This causes the motor speed to begin incrementing if auto mode is selected.
  +EQU--------------+                                              B3
-+EQUAL           +-----------------------------------------------(U)--
  |Source A  C5:0.ACC|                                              6
  |               0|
  |Source B       0|
  |                |
  +-----------------+
```

Rung 2:5
Counter C5:0 indicates the speed of the motor. If auto mode is selected and
the motor is started the counter will increment.
```
 | T4:0  +EQU--------------+  B3   C5:0   B3        +CTU--------------+          |
 |--] [--+EQUAL            +--] [---]/[---]/[--------+COUNT UP        +-(CU)-     |
 |   DN  |Source A      N7:0|   4    DN     6        |Counter     C5:0+-(DN)      |
 |       |                0|                         |Preset        20|          |
 |       |Source B        0|                         |Accum          0|          |
 |       |                 |                         +----------------+          |
 |       +----------------+                                                      |
```

Rung 2:6
Counter C5:0 indicates the speed of the motor. If auto mode is selected and
the motor is started the counter will decrement.
```
 | T4:0  +EQU--------------+  B3    B3              +CTD--------------+          |
 |--] [--+EQUAL            +--] [---] [-------------+COUNT DOWN      +-(CD)-      |
 |   DN  |Source A      N7:0|   4     6             |Counter     C5:0+-(DN)      |
 |       |                0|                        |Preset        20|          |
 |       |Source B        0|                        |Accum          0|          |
 |       |                 |                        +----------------+          |
 |       +----------------+                                                     |
```

Rung 2:7
The motor speed is scaled by a value of 50 and stored in address N7:1 when in
auto mode.
```
 |  +EQU--------------+                            +MUL--------------+          |
 |-+EQUAL             +----------------------------------+MULTIPLY         +-   |
 |  |Source A      N7:0|                            |Source A  C5:0.ACC|        |
 |  |                0|                             |               0|         |
 |  |Source B        0|                             |Source B       50|        |
 |  |                 |                             |                 |         |
 |  +----------------+                              |Dest          N7:1|        |
 |                                                  |               0|         |
 |                                                  +----------------+          |
```

Rung 2:8
The operator entered motor speed, indicated by N7:1, is scaled and stored in
C5:0 when manual mode is selected.
```
 |  +EQU--------------+                            +DIV--------------+          |
 |-+EQUAL             +----------------------------------+DIVIDE           +-   |
 |  |Source A      N7:0|                            |Source A      N7:1|        |
 |  |                0|                             |               0|         |
 |  |Source B        1|                             |Source B       50|        |
 |  |                 |                             |                 |         |
 |  +----------------+                              |Dest     C5:0.ACC|        |
 |                                                  |               0|         |
 |                                                  +----------------+          |
```

Rung 2:9
Timer used for incrementing and decrementing motor speed when manual mode is
selected.
```
 | T4:1                                            +TON--------------+          |
 |--]/[--------------------------------------------+TIMER ON DELAY  +-(EN)-     |
 |   DN                                            |Timer        T4:1+-(DN)     |
 |                                                 |Time Base    0.01|          |
 |                                                 |Preset         50|          |
 |                                                 |Accum           0|          |
 |                                                 +----------------+          |
```

Rung 2:10
When the motor is started or stopped, the motor speed is moved to N7:2. The
PanelView displays the value at N7:2.

```
   B3                                                          +MOV--------------+
--] [-----------------------------------------------------+MOVE             +-
    4                                                       |Source       N7:1|
                                                            |                0|
                                                            |Dest         N7:2|
                                                            |                0|
                                                            +-----------------+
```

Rung 2:11
When the motor is started or stopped, the motor speed is moved to N7:2. The PanelView
displays the value at N7:2.

```
   B3                                                          +MOV--------------+
--] [-----------------------------------------------------+MOVE             +-
    5                                                       |Source          0|
                                                            |                 |
                                                            |Dest         N7:2|
                                                            |                0|
                                                            +-----------------+
```

Rung 2:12
The motor speed is incremented by a value of 10 if the increment push button
is pressed, manual mode is selected, and the motor is started.

```
   B3    T4:1 +EQU--------------+  B3   +LEQ--------------+   +ADD--------------+
--] [---] [--+EQUAL          +--] [--+LESS THAN OR EQUAL+----+ADD            +-
    2    DN  |Source A     N7:0|    4 |Source A     N7:1|    |Source A     N7:1|
            |                0|      |                0|    |                0|
            |Source B        1|      |Source B      990|    |Source B       10|
            |                 |      |                 |    |                 |
            +-----------------+      +-----------------+    |Dest         N7:1|
                                                            |                0|
                                                            +-----------------+
```

Rung 2:13
The motor speed is decremented by a value of 10 if the decrement push button
is pressed, manual mode is selected, and the motor is started.

```
   B3    T4:1 +EQU--------------+  B3   +GEQ--------------+   +SUB--------------+
--] [---] [--+EQUAL          +--] [--+GRTR THAN OR EQUAL+----+SUBTRACT       +-
    3    DN  |Source A     N7:0|    4 |Source A     N7:1|    |Source A     N7:1|
            |                0|      |                0|    |                0|
            |Source B        1|      |Source B       10|    |Source B       10|
            |                 |      |                 |    |                 |
            +-----------------+      +-----------------+    |Dest         N7:1|
                                                            |                0|
                                                            +-----------------+
```

Rung 2:14

```
  +LIM--------------+                                          +MOV--------------+
-+LIMIT TEST      +-------------------------------------------+MOVE             +-
 |Low Lim      950|                                          |Source        950|
 |                |                                          |                 |
 |Test        N7:1|                                          |Dest         N7:3|
 |               0|                                          |                0|
 |High Lim    1000|                                          +-----------------+
 |                |
 +-----------------+
```

```
Rung 2:15
 |  +LIM--------------+                                                +MOV--------------+ |
 |-+LIMIT TEST        +-----------------------------------------------+MOVE             +-|
 |  |Low Lim        0|                                                |Source         50| |
 |  |                |                                                |                 | |
 |  |Test        N7:1|                                                |Dest         N7:3| |
 |  |               0|                                                |                0| |
 |  |High Lim      50|                                                +-----------------+ |
 |  |                |                                                                    |
 |  +----------------+                                                                    |

Rung 2:16
 |  +LIM--------------+                                                +MOV--------------+ |
 |-+LIMIT TEST        +-----------------------------------------------+MOVE             +-|
 |  |Low Lim       51|                                                |Source          0| |
 |  |                |                                                |                 | |
 |  |Test        N7:1|                                                |Dest         N7:3| |
 |  |               0|                                                |                0| |
 |  |High Lim     949|                                                +-----------------+ |
 |  |                |                                                                    |
 |  +----------------+                                                                    |

Rung 2:17
 |                                                                                        |
 |----------------------------------+END+-------------------------------------------------|
 |                                                                                        |
```

PLC Ladder Logic Program for Remote I/O Application

Program Listing Report for RIO   PLC-5/25   File GSRIO1

```
Rung 2:0
Block transfer data for PanelView outputs.
| N17:0 N17:20                                   +BTW-------------------+    |
+--]/[---]/[-------------------------------------+BLOCK TRANSFER WRITE  +-(EN)-+
|   15    15                                      |Rack            01|          |
|                                                 |Group            0+-(DN) |
|                                                 |Module           0|          |
|                                                 |Control block  N17:0+-(ER) |
|                                                 |Data file      N7:0|        |
|                                                 |Length          10|          |
|                                                 |Continuous       N|          |
|                                                 +-------------------+          |


Rung 2:1
Block transfer data for PV inputs.
| N17:20 N17:0                                    +BTR-------------------+    |
+--]/[----]/[------------------------------------+BLOCK TRANSFER READ   +-(EN)-+
|   15    15                                      |Rack            01|          |
|                                                 |Group            0+-(DN) |
|                                                 |Module           0|          |
|                                                 |Control block  N17:20+-(ER) |
|                                                 |Data file      N7:10|       |
|                                                 |Length          10|          |
|                                                 |Continuous       N|          |
|                                                 +-------------------+          |

Rung 2:2
When the start motor push button is pressed, set the motor start indicator and
reset the motor stop indicator.
| Start                                                     Motor      |
| motor                                                     started    |
| pushbutton                                                indicator  |
|   I:010                                                    O:010     |
+----] [---------------------------------------------------+---(L)----+-+
|     10                                                    |   10    | |
|                                                           |Motor    | |
|                                                           |stopped  | |
|                                                           |indicator| |
|                                                           | O:010   | |
|                                                           +---(U)----+ |
|                                                                11    |

Rung 2:3
When the stop motor push button is pressed, set the motor stop indicator and
reset the motor start indicator.
| Stop                                                      Motor      |
| motor                                                     stopped    |
| pushbutton                                                indicator  |
|   I:010                                                    O:010     |
+----] [---------------------------------------------------+---(L)----+-+
|     11                                                    |   11    | |
|                                                           |Motor    | |
|                                                           |started  | |
|                                                           |indicator| |
|                                                           | O:010   | |
|                                                           +---(U)----+ |
|                                                                10    |
```

```
Rung 2:4
In auto mode, N7:10 equals 0.
In manual mode, N7:10 equals 1.
|       Auto/Man                                    Auto/Man        |
|       indicator                                   status          |
|                                                   indicator       |
| +EQU-------------+                      +MOV--------------+ |
+-+EQUAL           +----------------------------------+MOVE         +-+
| |Source A    N7:10|                     |Source            0| |
| |               1|                      |                   | |
| |Source B        0|                     |Destination    N7:3| |
| |                |                       |                  1| |
| +---------------+                        +----------------+ |


Rung 2:5
In auto mode, N7:10 equals 0.
In manual mode, N7:10 equals 1.
|       Auto/Man                                    Auto/Man        |
|       indicator                                   status          |
|                                                   indicator       |
| +EQU-------------+                      +MOV--------------+ |
+-+EQUAL           +----------------------------------+MOVE         +-+
| |Source A    N7:10|                     |Source            1| |
| |               1|                      |                   | |
| |Source B        1|                     |Destination    N7:3| |
| |                |                       |                  1| |
| +---------------+                        +----------------+ |


Rung 2:6
Timer for incrementing and decrementing the motor speed in auto mode.
|  T4:0                                    +TON--------------+     |
+--]/[------------------------------------+TIMER ON DELAY   +-(EN)-+
|    DN                                    |Timer        T4:0|     |
|                                          |Time base    0.01+-(DN) |
|                                          |Preset         50|     |
|                                          |Accum          36|     |
|                                          +----------------+     |


Rung 2:7
The latched bit (B3:0/3) is used to decrement the motor speed in auto mode.
|  C5:0                                                        B3  |
+--] [----------------------------------------------------------(L)--+
|    DN                                                         3 |


Rung 2:8
The unlatch bit (B3:0/3) is used to increment the motor speed in auto mode.
| +EQU-------------+                                           B3  |
+-+EQUAL           +--------------------------------------------(U)--+
| |Source A  C5:0.ACC|                                          3 |
| |               6|                                              |
| |Source B        0|                                             |
| |                |                                              |
| +---------------+                                              |
```
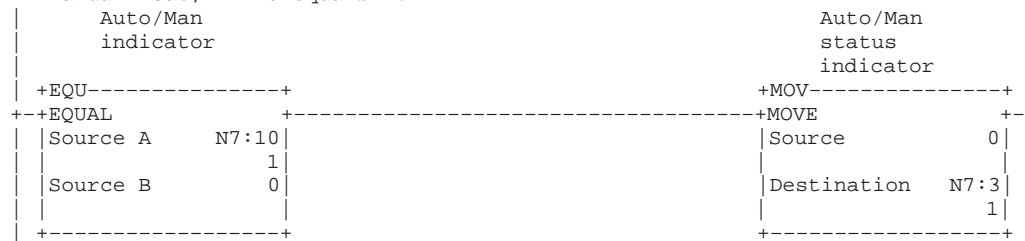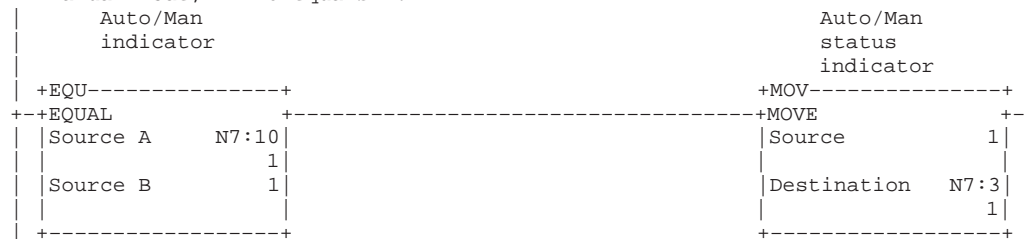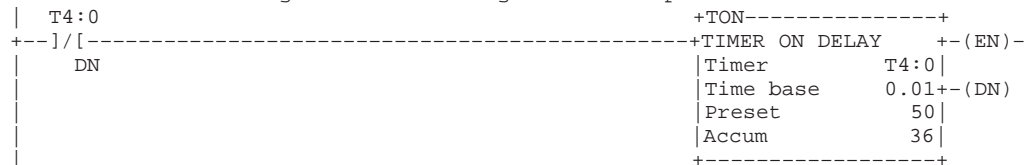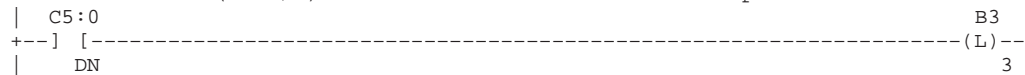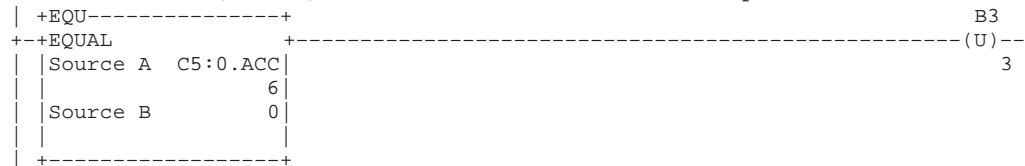
Rung 2:9
In auto mode, the motor speed will continually increment and decrement between
zero and one thousand.

```
|                 Auto/Man           Motor                                       |
|                 indicator          started                                     |
|                                    indicator                                   |
|  T4:0 +EQU---------------+   O:010              B3   +CTU---------------+       |
+--] [--+EQUAL            +----] [----------+-]/[--+COUNT UP        +-(CU)+-+
|    DN |Source A     N7:10|    10           |   3 |Counter       C5:0|   | |
|       |             1|                     |     |Preset         20+-(DN)| |
|       |Source B         0|                 |     |Accum           6|   | |
|       |                 |                  |     +-----------------+   | |
|       +-----------------+                  |  B3 +CTD---------------+   | |
|                                            +-] [--+COUNT DOWN       +-(CD)+ |
|                                            |   3 |Counter       C5:0|   | |
|                                            |     |Preset         20+-(DN)| |
|                                            |     |Accum           6|   | |
|                                            |     +-----------------+   | |
|                                            |              Motor        | |
|                                            |              speed        | |
|                                            |              indicator    | |
|                                            |         +MUL---------------+| |
|                                            +----------+MULTIPLY         ++ |
|                                                       |Source A  C5:0.ACC| |
|                                                       |                 6| |
|                                                       |Source B        50| |
|                                                       |                  | |
|                                                       |Destination  N7:1| |
|                                                       |               510| |
|                                                       +-----------------+ |
```
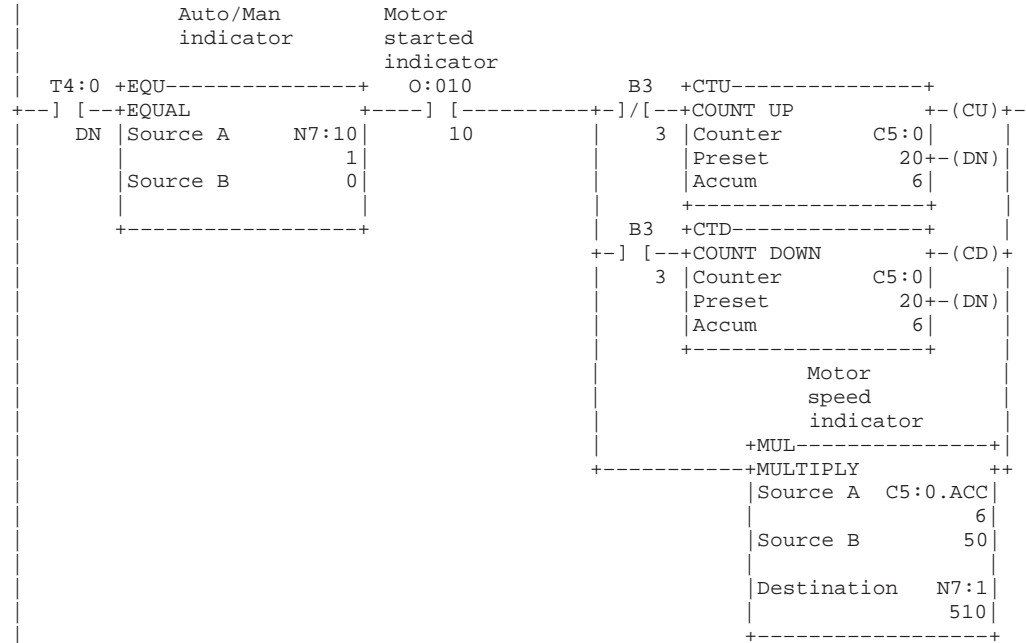
Rung 2:10
In manual mode, the motor speed is incremented by ten each time the increment
motor speed push button goes from a false to true transition.

```
|       Auto/Man        Increment                       Motor                 |
|       status          motor                           speed                 |
|       indicator       speed                           indicator             |
|                       pushbutton                                            |
|  +EQU---------------+   N7:11        T4:0        +ADD---------------+        |
+--+EQUAL            +----] [------] [-------------------+ADD              +-+
|  |Source A     N7:3|     1         DN             |Source A        10| |
|  |             1|                                 |                  | |
|  |Source B         1|                             |Source B     N7:1| |
|  |                 |                              |               510| |
|  +-----------------+                              |Destination  N7:1| |
|                                                   |               510| |
|                                                   +-----------------+ |
```
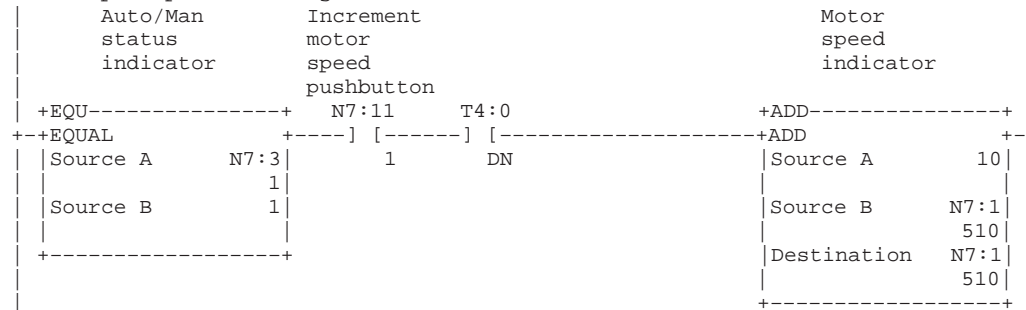
Rung 2:11
In manual mode, the motor speed is decremented by one each time the decrement
motor speed push button goes from a false to true transition.

```
|       Auto/Man        Decrement                       Motor                 |
|       status          motor                           speed                 |
|       indicator       speed                           indicator             |
|                       pushbutton                                            |
|  +EQU---------------+   N7:11        T4:0        +SUB---------------+        |
+--+EQUAL            +----] [------] [-------------------+SUBTRACT         +-+
|  |Source A     N7:3|     0         DN             |Source A     N7:1| |
|  |             1|                                 |               510| |
|  |Source B         1|                             |Source B        10| |
|  |                 |                              |                  | |
|  +-----------------+                              |Destination  N7:1| |
|                                                   |               510| |
|                                                   +-----------------+ |
```
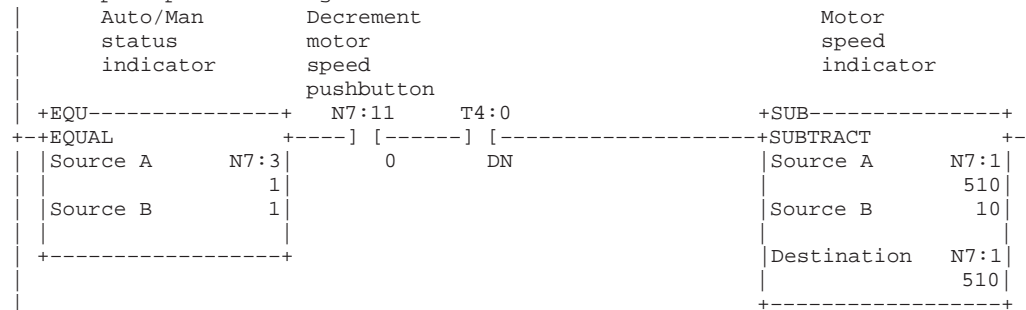
```
Rung 2:12
When the motor speed notification bit is set, set the motor speed handshake bit
and set the indicated motor speed to reflect the entered motor speed.
| Motor                                                            Motor     |
| speed                                                            speed     |
| notifica-                                                        handshake |
| tion                                                                       |
|   N7:11                                                           N7:2      |
+----] [---------------------------------------------+------------( )----+-+
|       4                                             |              2     | |
|                                                     |           Motor    | |
|                                                     |           speed    | |
|                                                     |           indicator| |
|                                                     |+MOV--------------+| |
|                                                     ++MOVE            ++ |
|                                                     |Source      N7:13| |
|                                                     |               999| |
|                                                     |Destination  N7:1| |
|                                                     |               510| |
|                                                     +-----------------+  |

Rung 2:13
|      Maximum                                              Motor            |
|      motor                                                speed            |
|      speed is 1000                                        indicator        |
|                                                                            |
| +GRT--------------+                              +MOV--------------+ |
+-+GREATER THAN     +------------------------------+MOVE             +-+
| |Source A     N7:1|                              |Source      1000| |
| |             510|                              |                | |
| |Source B     1000|                              |Destination  N7:1| |
| |                 |                              |               510| |
| +-----------------+                              +-----------------+ |

Rung 2:14
|      Minimum                                              Motor            |
|      motor                                                speed            |
|      speed is zero                                        indicator        |
|                                                                            |
| +LES--------------+                              +MOV--------------+ |
+-+LESS THAN        +------------------------------+MOVE             +-+
| |Source A     N7:1|                              |Source         0| |
| |             510|                              |                | |
| |Source B        0|                              |Destination  N7:1| |
| |                 |                              |               510| |
| +-----------------+                              +-----------------+ |

Rung 2:15
| Motor stop                                                Motor            |
| indicator                                                 speed            |
|                                                           indicator        |
|   O:010                                          +MOV--------------+ |
+----] [-------------------------------------------+MOVE             +-+
|     11                                           |Source         0| |
|                                                  |                | |
|                                                  |Destination  N7:1| |
|                                                  |               510| |
|                                                  +-----------------+ |
```
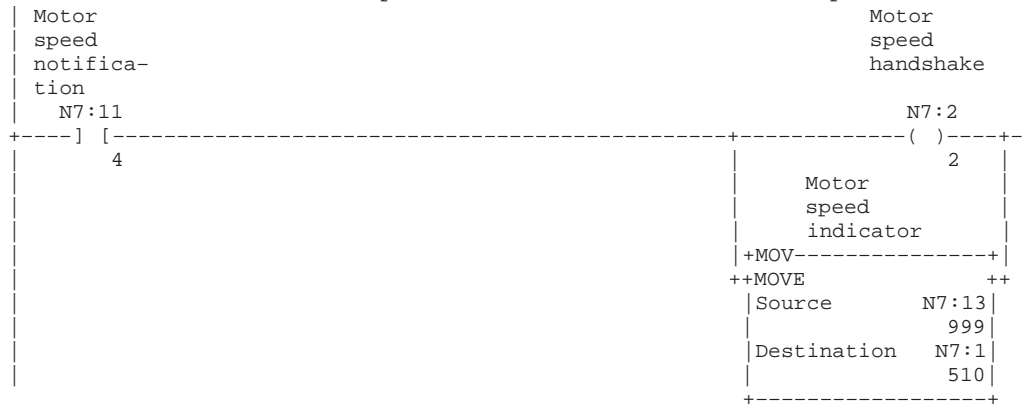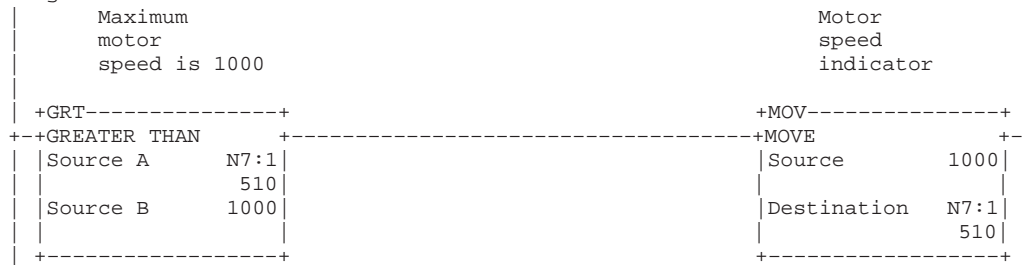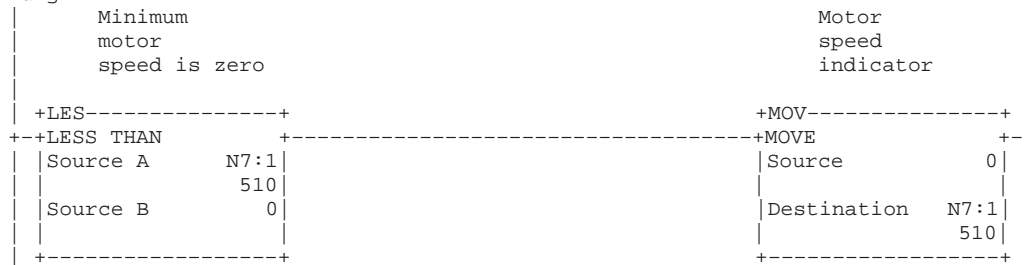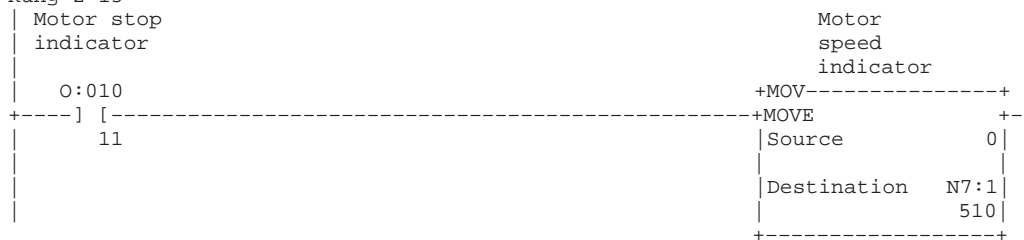
```
Rung 2:16
|     Motor                Auto/Man                                          |
|     speed                indicator                                         |
|     indicator                                                              |
| +EQU--------------+ +EQU--------------+          +MOV--------------+ |
+-+EQUAL            +-+EQUAL             +--------------+MOVE            +-+
| |Source A    N7:1| |Source A     N7:10|          |Source       950| |
| |            510| |                  1|          |                | |
| |Source B     950| |Source B          1|          |Destination  N7:4| |
| |                | |                  |          |               0| |
| +----------------+ +----------------+          +----------------+ |


Rung 2:17
|     Motor                Auto/Man                                          |
|     speed                indicator                                         |
|     indicator                                                              |
| +EQU--------------+ +EQU--------------+          +MOV--------------+ |
+-+EQUAL            +-+EQUAL             +--------------+MOVE            +-+
| |Source A    N7:1| |Source A     N7:10|          |Source        50| |
| |            510| |                  1|          |                | |
| |Source B      50| |Source B          1|          |Destination  N7:4| |
| |                | |                  |          |               0| |
| +----------------+ +----------------+          +----------------+ |


Rung 2:18
|                                                                            |
+-----------------------------[END OF FILE]--------------------------------+
|                                                                            |
```

PLC Ladder Logic Program for DH+ Application

```
Program Listing            Processor File: GSDHP.AF5

Rung 2:0
Timer for incrementing and decrementing motor speed in auto mode.
|     T4:0                                        +TON--------------+     |
|----]/[-----------------------------------------+TIMER ON DELAY   +-(EN)-|
|      DN                                         |Timer        T4:0+-(DN)|
|    (2:0)                                         |Time Base    0.01|     |
|                                                 |Preset        200|     |
|                                                 |Accum           0|     |
|                                                 +-----------------+     |


Rung 2:1
The motor is started when the Start Push Button is pressed on the PanelView.
Start status is indicated by B3:0/4.
|     B3                                                               B3 |
|-+--] [----------------+-----------------------------------------------( )--|
| |     0               |                                                4 |
| |     B3         B3   |                                                  |
| +----] [--------]/[-----+                                                |
|      4          5                                                        |
|                                                    |                     |


Rung 2:2
The motor is stopped when the Stop Push Button is pressed on the PanelView.
Stop status is indicated by B3:0/5.
|     B3                                                               B3 |
|-+--] [----------------+-----------------------------------------------( )--|
| |     1               |                                                5 |
| |     B3         B3   |                                                  |
| +----] [--------]/[-----+                                                |
|      5          4                                                        |
|                                                    |                     |


Rung 2:3
The latch bit (B3:0/6) is unlatched when counter C5:0 is done decrementing.
This causes the motor speed to begin incrementing if auto mode is selected.
|     C5:0                                                             B3 |
|----] [---------------------------------------------------------------(L)--|
|      DN                                                              6 |


Rung 2:4
The latch bit (B3:0/6) is unlatched when counter C5:0 is done decrementing.
This causes the motor speed to begin incrementing if auto mode is selected.
| +EQU--------------+                                                  B3 |
|-+EQUAL            +----------------------------------------------------(U)--|
| |Source A  C5:0.ACC|                                                  6 |
| |               0|                                                      |
| |Source B        0|                                                    |
| |                 |                                                      |
| +-----------------+                                                     |


Rung 2:5
Counter C5:0 indicates the speed of the motor.  If auto mode is selected and
the motor is started the counter will increment.
| T4:0  +EQU--------------+   B3   C5:0 B3    +CTU--------------+        |
|--] [--+EQUAL            +--] [---]/[---]/[--------+COUNT UP         +-(CU)-|
|   DN  |Source A     N7:0|    4    DN   6     |Counter       C5:0+-(DN)|
|       |               0|                     |Preset         20|       |
|       |Source B        0|                    |Accum           0|       |
|       |                 |                    +-----------------+        |
|       +-----------------+                                               |
```

```
Rung 2:6
Counter C5:0 indicates the speed of the motor.  If auto mode is selected and
the motor is started the counter will decrement.
|  T4:0   +EQU--------------+    B3    B3          +CTD--------------+     |
|--] [--+EQUAL            +--] [---] [------------+COUNT DOWN    +-(CD)-|
|    DN |Source A     N7:0|   4    6         |Counter      C5:0+-(DN) |
|       |                0|                  |Preset         20|      |
|       |Source B        0|                  |Accum           0|      |
|       |                 |                  +-----------------+      |
|       +-----------------+                                           |
```

```
Rung 2:7
The motor speed is scaled by a value of 50 and stored in address N7:1 when in
auto mode.
|  +EQU--------------+                           +MUL--------------+ |
|-+EQUAL            +-----------------------------+MULTIPLY       +- |
| |Source A     N7:0|                           |Source A  C5:0.ACC| |
| |                0|                           |                 0| |
| |Source B        0|                           |Source B        50| |
| |                 |                           |                  | |
| +-----------------+                           |Dest         N7:1| |
|                                               |                 0| |
|                                               +-----------------+ |
```

```
Rung 2:8
The operator entered motor speed, indicated by N7:1, is scaled and stored in
C5:0 when manual mode is selected.
|  +EQU--------------+                           +DIV--------------+ |
|-+EQUAL            +-----------------------------+DIVIDE         +- |
| |Source A     N7:0|                           |Source A     N7:1| |
| |                0|                           |                 0| |
| |Source B        1|                           |Source B        50| |
| |                 |                           |                  | |
| +-----------------+                           |Dest      C5:0.ACC| |
|                                               |                 0| |
|                                               +-----------------+ |
```

```
Rung 2:9
Timer used for incrementing and decrementing motor speed when manual mode is
selected.
|     T4:1                                       +TON--------------+ |
|----]/[-----------------------------------------+TIMER ON DELAY +-(EN)-|
|     DN                                         |Timer        T4:1+-(DN)|
|                                                |Time Base    0.01|    |
|                                                |Preset         50|    |
|                                                |Accum           0|    |
|                                                +-----------------+    |
```

```
Rung 2:10
When the motor is started or stopped, the motor speed is moved to N7:2.  The
PanelView displays the value at N7:2.
|     B3                                         +MOV--------------+ |
|----] [-----------------------------------------+MOVE           +- |
|     4                                          |Source       N7:1| |
|                                                |                 0| |
|                                                |Dest         N7:2| |
|                                                |                 0| |
|                                                +-----------------+ |
```

```
Rung 2:11
When the motor is started or stopped, the motor speed is moved to N7:2.  The
PanelView displays the value at N7:2.
|     B3                                         +MOV--------------+ |
|----] [-----------------------------------------+MOVE           +- |
|     5                                          |Source          0| |
|                                                |                  | |
|                                                |Dest         N7:2| |
|                                                |                 0| |
|                                                +-----------------+ |
```

```
Rung 2:12
The motor speed is incremented by a value of 10 if the increment push button
is pressed, manual mode is selected, and the motor is started.
|  B3    T4:1 +EQU-----------+   B3  +LEQ--------------+ +ADD-------------+ |
|--] [---] [--+EQUAL         +--] [--+LESS THAN OR EQUAL+-+ADD             +-
|    2    DN  |Source A   N7:0|     4 |Source A      N7:1| |Source A     N7:1|
|             |              0|       |             0| |             0|
|             |Source B      1|       |Source B      990| |Source B       10|
|             |               |       |                  | |                 |
|             +---------------+       +------------------+ |Dest         N7:1|
|                                                          |             0|
|                                                          +---------------+ |

Rung 2:13
The motor speed is decremented by a value of 10 if the decrement push button
is pressed, manual mode is selected, and the motor is started.
|  B3    T4:1 +EQU-----------+   B3  +GEQ--------------+ +SUB--------------+ |
|--] [--] [--+EQUAL          +--] [--+GRTR THAN OR EQUAL+--+SUBTRACT        +-
|    3    DN  |Source A  N7:0|     4 |Source A      N7:1| |Source A     N7:1|
|             |             0|       |             0| |             0|
|             |Source B     1|       |Source B       10| |Source B       10|
|             |              |       |                  | |                 |
|             +--------------+       +------------------+ |Dest         N7:1|
|                                                         |             0|
|                                                         +----------------+ |


Rung 2:14
  +LIM---------------+                                      +MOV---------------+ |
 -+LIMIT TEST        +--------------------------------------+MOVE              +-
  |Low Lim       950|                                      |Source          950|
  |                  |                                      |                   |
  |Test         N7:1|                                      |Dest          N7:3|
  |             0|                                      |              0|
  |High Lim     1000|                                      +-----------------+ |
  |                  |                                                          |
  +-----------------+                                                          |

Rung 2:15
  +LIM---------------+                                      +MOV---------------+ |
 -+LIMIT TEST        +--------------------------------------+MOVE              +-
  |Low Lim         0|                                      |Source           50|
  |                  |                                      |                   |
  |Test         N7:1|                                      |Dest          N7:3|
  |             0|                                      |              0|
  |High Lim       50|                                      +-----------------+ |
  |                  |                                                          |
  +-----------------+                                            |

Rung 2:16
  +LIM---------------+                                      +MOV---------------+ |
 -+LIMIT TEST        +--------------------------------------+MOVE              +-
  |Low Lim        51|                                      |Source            0|
  |                  |                                      |                   |
  |Test         N7:1|                                      |Dest          N7:3|
  |             0|                                      |              0|
  |High Lim      949|                                      +-----------------+ |
  |                  |                                                          |
  +-----------------+                                                          |

Rung 2:17
|                                                                             |
|--------------------------------+END+---------------------------------------|
|                                                                             |
```
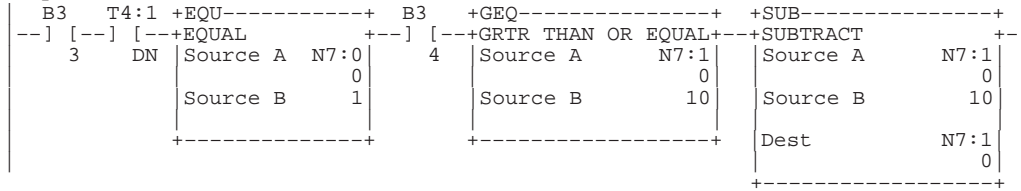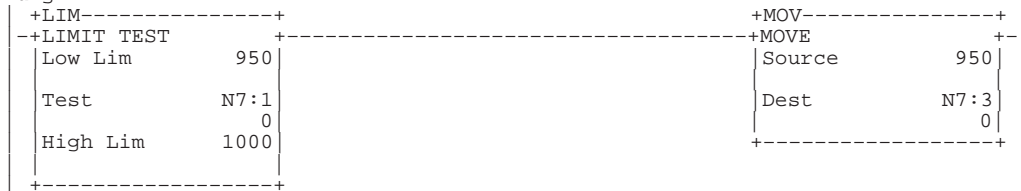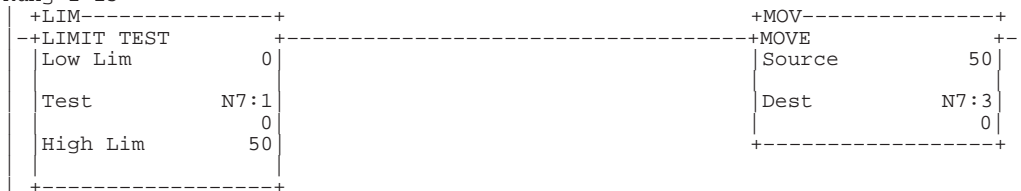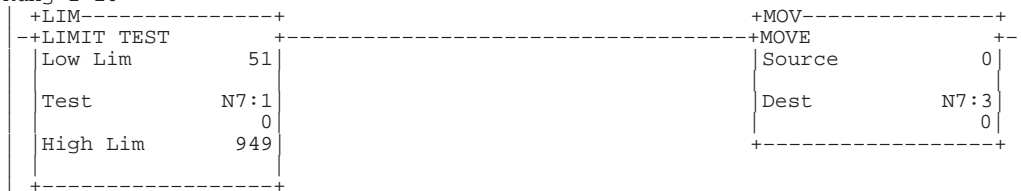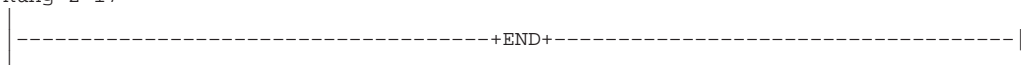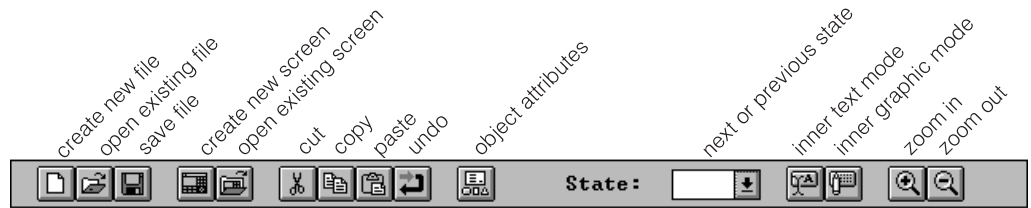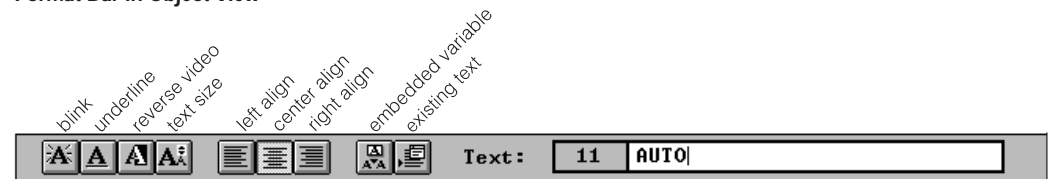
PanelBuilder Tools

create new file
open existing file
save file
create new screen
open existing screen
cut
copy
paste
undo
object attributes
next or previous state
inner text mode
inner graphic mode
zoom in
zoom out

State:

Tool Bar

blink
reverse video
fill pattern
line type
shape
group
ungroup
bring to front
send to back

Format Bar in Object View

blink
underline
reverse video
text size
left align
center align
right align
embedded variable
existing text

Text: 11   AUTO

Format Bar in Text View

import graphics

Graphics: List of available graphics
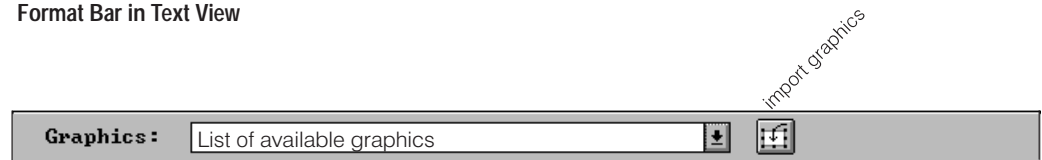
Format Bar in Graphics View

Toolbox

ISA Symbols

Rockwell Automation
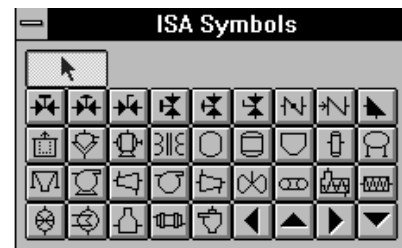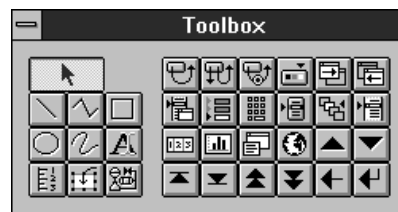
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Rockwell Automation Headquarters, 1201 South Second Street, Milwaukee, WI 53204-2496 USA, Tel: (1) 414 382-2000 Fax: (1) 414 382-4444
Rockwell Automation European Headquarters, Avenue Hermann Debroux, 46, 1160 Brussels, Belgium, Tel: (32) 2 663 06 00, Fax: (32) 2 663 06 40
Rockwell Automation Asia Pacific Headquarters, 27/F Citicorp Centre, 18 Whitfield Road, Causeway Bay, Hong Kong, Tel: (852) 2887 4788, Fax: (852) 2508 1846
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